



This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

### Usage guidelines

Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

We also ask that you:

- + *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.
- + *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.
- + *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.
- + *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

### About Google Book Search

Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at <http://books.google.com/>

5979  
26  
B 499934 L

V. OF MICH.  
MAY 12 1901

## Bulletin No. 1, Volume II.

Issued Quarterly by

# Vermont State Board of Health,

September, 1901.

---

### CONTENTS:

Introductory Remarks by President of State Board, Dr. C. S. Caverly.

Address of Welcome by His Honor, the Mayor, D. C. Hawley.

Address by His Excellency, Gov. W. W. Stickney.

Address by Hon. J. A. De Boer, Montpelier.

Sketch of the Life of Dr. Jo H. Linsley.

Laws Relating to Public Health, Joel C. Baker.

Health Officers: Their Duties and Responsibilities, H. L. Stillson.

Sanitary Legislation, W. M. Platt, M. D.

The Relation of Animal Diseases to Public Health, Don D. Grout, M. D.

Consumption: Nature and Prevention.

---

BRATTLEBORO, VT.

1901

Sec.  
person,



## INTRODUCTION.

27. The attendance upon the third annual school for health officers was larger than upon either of the previous ones. The interest manifested by those in attendance was enthusiastic and continued through all the sessions of the school. It is to be regretted that so many towns were unrepresented, either by their health officer or some member of their local board of health. These unrepresented towns were the smaller towns; how much their pecuniary loss will be, or how much their death rate might have been reduced by the knowledge their health officer might have gained, cannot be told. It would seem that every person in the state who gives only a limited consideration to the general health of his neighborhood or town would see the importance of having a person for health officer who had at least availed himself of some means of gathering a sufficient knowledge of general sanitary laws sufficient to enable him to execute the laws enacted by the legislature of the state in an intelligent manner. At the present time there are no schools where sanitary science or the duties of health officers are taught, and books upon hygiene are not readily accessible, owing to the fact that they are expensive publications, hence the only means at hand whereby a large number of the local health boards of the state can inform themselves is by attending this school instituted under the authority conferred by legislative enactment, upon the State Board of Health. It is the towns whose villages are small, most of the inhabitants living on farms, that will derive the most benefit from this diffusion of sanitary knowledge. The cities and most of the large villages have officials whose duty it is to look after their sanitary condition. The fact that these cities and villages have larger grand lists and consequently are able to better compensate their health officials, enables these officers to purchase such publications as will give them a better preparation for their work than can be acquired by their less fortunate colleagues. For these reasons we venture to hope that at the next annual school for health officers we shall see all of the small towns represented, to the extent that the whole state may be put in as thorough a sanitary condition as possible. The more thorough we are in everything that tends to improve our hygienic status the lower our death rate will be, the less will be the suffering and anguish in our homes, and the greater the sum of happiness.

A careful reading of Dr. Caverly's remarks, published in this Bulletin, in which he shows the death rate from certain diseases during the five years before the State Board of Health was established, and that from the same diseases in the last five years, is instructive. Taking the two diseases, scarlet fever and diphtheria, the lessened mortality resulted in saving the lives of six hundred and fifty-eight persons. Leaving out the worth of each life to the state and the sorrow and misery which would have come to the families if these persons had died, we can approximately compute the financial savings for medical attendance, nursing and funeral expenses. Placing these three items at an average of sixty dollars for each person,

we have the sum of thirty-nine thousand four hundred and eighty dollars, the sum which is nearly twelve hundred dollars more than has been expended for expenses of the State Board for the fourteen years of its existence.

Other bulletins of this series will be published from time to time which will include all the papers and discussions presented at the school of health officers. Other subjects will also be presented.

STATE BOARD OF HEALTH.

HENRY D. HOLTON, Secretary.

*Brattleboro, Sept. 2, 1901.*

INTRODUCTORY REMARKS BY PRESIDENT OF STATE BOARD,  
DR. C. S. CAVERLY.

*Ladies and Gentlemen:*—In the few remarks which I am supposed to make at this opening session, I thought it might not be amiss to review very briefly the history of the public health legislation here in this state and make an attempt to measure practically the value of that legislation to the public health.

Previous to 1886, the laws pertaining to public health or sanitation here in Vermont were very few. There was a registration law which provided for the registration of births, marriages or deaths, or divorces, through the agencies of school and district town clerks and county clerks. That law was in force up to the year 1896, forty years. There was also a law on the statute books for a good many years giving the selectmen in towns certain authorities as local boards of health. In regard to the abatement of nuisances there was also a law. There was also a law pertaining to the subject of small pox. Those were the chief laws which bore directly or indirectly upon the present time. In 1886 a law was passed creating the State Board of Health. The law instructs that they shall take cognizance of the interests and health of the people of this state. They shall make sanitary investigations under certain circumstances. They shall advise with the selectmen and municipal officers in regard to the sanitation of public buildings. Also promulgate rules and regulations in contagious diseases. Their authority, however, was limited, but it enabled them to issue rules and regulations applicable to epidemic diseases. After the amendment of it in 1894, it gave them authority not only in the presence of those epidemics, but to make rules that would lead up to the causes. The first board was comprised of A. S. Chesmore, J. M. Hamilton and C. Allen.

In 1888 a bill was passed which was very similar to the present one, and comprised a registration law which is similar to our present one.

In 1889 the State Board of Health, as then constituted, began to appoint health officers to be in touch with them in all the towns of the state so far as they could obtain those who would volunteer their services. They had no authority—recognized under the law. This was the first appointment, the first use of the name, health officer, in this state. That condition of things remained for about three years. In 1892 a law was passed which created that office legally. That law was very similar to the one passed more recently. In 1890 a public health bill was passed by the Senate, not including in it the registration provision, but simply a public health bill; also very much like the public health law we have now. In 1892 the present law in the main was passed—that is, regarding the powers and authorities of the health officers and the controlling of epidemics and contagious diseases. In 1896 a law was passed amending the health provision. In 1896 a new registration law was passed. In 1898 the chief public health law was passed, establishing the laboratory of hygiene. In 1900 this bill was extended and the laboratory was extended and the appropriation increased.

This act gives the State Board of Health the authority, at least once a year, if it sees fit, to hold this school of instruction. The first school was held two years ago here in Burlington, and a year ago, both without any direct authority from the legislature. We now have the written authority in the law for conducting this school of instruction at least once a year.

The question very probably comes up, and it is a difficult one in some ways to answer, What has been the effect of this health legislation upon the health of the state? As you are most of you aware, the public health laws and the science of sanitation deal with the so-called infectious diseases. There are a number of diseases which are understood better now than ever before and whose causes are sufficiently understood so that rules can be laid down for their control or prevention. Those diseases include the following: scarlet fever, diphtheria, measles, whooping cough, tuberculosis, and that class of diseases that we understand and know to be infectious, due to a distinct cause. It will be interesting to know, and our statistics are not exact, but it will be interesting to know what the effect of this legislation has been upon the prevalence of these diseases. I have hit upon a plan as getting at it very nicely. It does not measure every prevalent disease exactly, but there is no way in which it can be measured. Our registration law is very accurate. It is more accurate than formerly, and the statistics of deaths have furnished us the statistics about the prevalence of these diseases.

Take five years from 1882, that is, from 1882 to 1886 inclusive, prior to the establishment of the State Board of Health and the enactment of this public health law, and the five years last passed of which we have statistics at hand from 1895 to 1899, and take the number of deaths from scarlet fever for each period and divide the same by five and we will have the average number of deaths from that disease.

Scarlet fever from 1882 to 1886 destroyed 303 lives in this state and from 1895 to 1899 inclusive it destroyed 130. That is an average of 60.6 deaths a year for the first period and 26 a year for the second. That is a reduction of the second over the first of 56.6 per cent. As to diphtheria, croup and membranous croup, for the first period 956 deaths and for the second 471, or an average of 191 deaths a year for the first five years, and 94.2 deaths a year for the second period, a reduction of the second over the first of 50.7 per cent.

Consumption, including pulmonary, phthisis and general tuberculosis, as they are classified, the number of deaths during the first period from 1882 to 1886 was 3747 deaths, and during the second period from 1895 to 1899, 2557 deaths. The first period averaged 749.4 deaths a year and the second 511.4 deaths a year or a reduction of 31.7 per cent on this dreaded disease, consumption.

Whooping cough—the average number of deaths for the first years was 31 and for the second 21.4, or a reduction of 31 per cent.

From typhoid fever, including those cases that are suspected as being typhoid and those that are simply mentioned as fever, during the first period there were 840 deaths; during the second, 529 deaths; an average during the

first period of 168 and during the second of 105.8, or a reduction of 130.7 per cent.

From measles during the first period there was an average of 19.6 deaths a year and 23.8 a year during the second period, an increase of 21.4 per cent. Measles is the only disease which has increased and the others have all decreased and I would like to simply call your attention to the fact that measles is almost as fatal a disease as scarlet fever, according to these statistics.

Dr. Kober, who is a Health Commissioner of the District of Columbia, in his oration at St. Paul before the American Medical Association on Hygiene and Public Health Sanitation, quotes advanced figures that are furnished to him by the census bureau, and he says that, over the whole country, there has been more or less of a reduction in the infectious diseases and their fatalities. He also says that there is a class of cases which does not come under these heads which are on the increase—Bright's disease, organic disease of the heart, cancer and one other—pneumonia. I have taken pains to get the figures for this state for the same period, and I find that the number of these cases in this state, as in the other states, is on the increase. From pneumonia in 1882 there was an annual death rate of 466 during the first period and of 540 during the second period, an increase of 13 per cent.

From organic diseases of the heart there was a rate of 412 deaths the first period and 536.8 the second period, an increase of 30 per cent.

From diseases of the kidneys during the first period there was an annual death rate of 146 and during the second 188.4, or an increase of 29 per cent.

From cancer, including tumors, there was an annual death rate of 191 and for the second period 215.8, or an increase of 12.9 per cent.

These statistics are valuable for the reason that they furnish us a certain clue to show where our energies are to be extended.

Consumption, tuberculosis, etc., are still too prevalent. The same might be said of all the others. Last year the death rate from diphtheria and croup was only 47, which was really very low for our state of 300,000 people.

The relative death rate of this state has not changed much with certain diseases within the last thirty years because the population is at a stand-still. There is, however, no question that the public health laws have had something to do with the reduction of these infectious diseases. I don't know that the public health officers are not responsible for the whole. They are entitled to some credit, due to the local boards of health in the main. They are the ones who have done this work and they must bear the brunt of all the work. For that reason this school of instruction was started. In England local health officers are expected and, I think, required to have a degree from an institution which instructs them for that field of work. There is no institution in this country that confers that degree. Our health officers, as you are all aware, get their instructions from books and from hard experience and that coupled with the instruction they get by coming to these schools, we think will be just as efficient as may be found in any other part of the world.



We are always glad to come to the city of Burlington. The atmosphere of Burlington at this present time is particularly pleasing. It is especially good now, for the good judgment of the people is shown in the selection of their mayor. They have chosen not only a good citizen, but a good mayor—Dr. D. C. Hawley, whom I take great pleasure in introducing to you this evening.

---

ADDRESS OF WELCOME BY HIS HONOR, THE MAYOR,  
D. C. HAWLEY.

*Mr. President and Health Officers of Vermont:—*

It is my pleasant duty in behalf of the citizens of Burlington to extend you a hearty greeting and a cordial welcome at this, your Third Annual Session.

The people of Burlington are proud to receive you, proud that the existence of the state laboratory here and your own choice have led you to select Burlington as your meeting place, and I assure you that the cordiality of our reception is second only to our desire that your stay may be both profitable and pleasant.

We look upon the State Board of Health and the health officers of Vermont as the conservators and guardians of the public health, and we trust and believe that your deliberations here at this time will result in much good to all the people of our commonwealth. Sanitary science and sanitary laws are nearly as old as the world itself. Greece had its sanitary laws and Rome was noted for its aqueducts and its sewers, for its systems of ventilation and baths, as well as for its famous roads. The Mosaic law gives evidence of a knowledge of the science of health which in many respects is worthy of the enlightenment of the dawning years of the twentieth century. Lord Beaconsfield once said, "The health of the people is the first duty of the statesman."

Public health is the element of first importance to the wealth and prosperity of a people. Public opinion throughout our land is fast awakening to the fact that the observance of modern sanitary laws, viewed both from the standpoint of economy and sound morality, is not only profitable but a public necessity, and to-day nearly every state in the union engages in the work of saving the lives and promoting the health of its people, through the beneficent work of its state board of health.

The laws of sanitary science, when backed by legal enactment and enforced by intelligent health authorities, are capable of preventing the spread of nearly all infectious and contagious diseases. The cholera, which has cost Europe millions upon millions of dollars, and a loss of life and health beyond human computation, can hardly to-day gain a foothold in the United States. Small pox, that loathsome disease which has decimated continents, is to-day safely controlled by isolation and vaccination. Proper sanitary laws in the hands of faithful and educated sanitary officers are

the only safeguard. Furthermore, the law must be supreme and the people must be educated, so far as possible, to a wholesome respect for the same.

As regards vaccination, it is not a question of whether individuals believe in it or not. The world of scientific medicine knows that it is a truth beyond peradventure of a doubt that of all the advances in sanitary medicine, the discovery of vaccination is the most important and valuable. It has accomplished more in relieving suffering and saving lives than any discovery the world has ever known and the name of Jenner stands first in the long list of benefactors of humanity.

The position of our State Board of Health and its efficient health officers upon the question of vaccination is well known. In view, however, of the unscientific and mischievous sentiments officially promulgated at a recent meeting of the Vermont Eclectic Medical Society, I believe it would be both timely and reassuring to the people of Vermont if their health officers here assembled would publicly record their consensus of opinion upon this important point.

Typhus fever and yellow fever do not today strike terror to our hearts because we know by experience that proper quarantine and modern sanitation will erect an insurmountable barrier to their progress.

The work you have before you, gentlemen, at this session, as well as your routine work as health officers in your various communities, is of an important and noble character. You seek the prevention rather than the cure of disease. To you is entrusted, in a large degree, the supervision of the lives and the health of our citizens. It is your duty to study the sanitary conditions of the various communities in which you live, to make and enforce regulations which shall ensure pure water and pure foods, to establish systems of sanitary ventilation and plumbing and of proper sewage and garbage disposal, and to limit the spread of contagious and infectious diseases. You must study the "effects of localities, employments, conditions, habits, foods, beverages, and medicines on the health of the people," and further, you must study vital statistics as affected by all these conditions.

In this connection you will permit me to suggest the great desirability of a uniform system of collecting and recording vital statistics throughout the United States.

The subject of tuberculosis is attracting much attention at the present time, both in this immediate vicinity and throughout the civilized world. The nature of the disease is now known and the fact that it is preventable is well established, as is also the fact of its transmissibility from the lower animals to man. It is the most widely disseminated and the most fatal disease affecting mankind at the present time, and the same statement is well known, by careful observers, to be true of domestic cattle.

The prevention of tuberculosis is, therefore, one of the paramount questions confronting the medical profession, state boards of health, and state and national governments at the present time. Isolation, disinfection, destruction of sputum, improved nutrition, and an abundance of fresh and pure air are amongst the agencies which must be employed in limiting the

disease. On the other hand, overcrowded, filthy and poorly or non-ventilated habitations, and a lack of proper nutriment during the formative period of life are among the fruitful causes of the spread of this fatal disease.

A subject which I trust may engage your thoughtful attention is that of the establishment of state sanatoria for the treatment and cure of tuberculosis. There is another topic, gentlemen, which, while not necessarily falling within your province as health officers, is of vital importance to all of us who are interested in preventing disease and degeneracy. I refer to the subject of inebriety.

Inebriety is looked upon to-day by scientific men everywhere as a disease manifesting itself in a disturbed and perverted nervous system, and the sooner the state realizes the fact that the inebriate is an invalid and not a criminal, that he needs medical treatment rather than a fine or the reformatory influence of the jail, that he is a public charge, incompetent of caring for himself or his family or his property, and that his progeny is sure to be degenerate, neurotic or feeble minded, the sooner will it place itself in the line of diminishing its pauper and criminal classes and of solving one phase of the temperance question. It is our duty, gentlemen, as physicians and guardians of the public health, to insist that the inebriate can not be properly treated in a reformatory institution, and I trust the day is not far distant when the state of Vermont will look upon the inebriate as a public charge to be placed in an institution especially established and equipped for the purpose, where scientific measures may be employed, looking towards a cure and resulting in favorable cases in which state guardianship is early instituted in his restoration to himself, to his family and to the state.

And now in conclusion, let me say that the state of Vermont is to be complimented upon the efficiency and aggressiveness of its State Board of Health as evidenced not only by the faithful work it is doing throughout the state, but further by the establishment here of the laboratory of hygiene, which has already proved itself of inestimable value, and by the fact that it was the first board of health in the United States to establish a state school for its health officers.

Again, gentlemen, I welcome you to Burlington, I offer you while here the freedom of the city, and I assure you that personally and officially I shall be glad to do anything within my power to make your meeting here both a pleasure and a success.

---

#### ADDRESS BY HIS EXCELLENCY, GOV. W. W. STICKNEY.

*Ladies and Gentlemen:*—In compliance with the request of the secretary of the State Board of Health I am with you this evening. I did not bring to you to-night any finished essay or any elaborate address. I simply came here to-night for the purpose of representing in my official capacity the

state, and to assure you of the great importance of this school, the great good it can do to the state, and also to ask you to expend the money which the people have appropriated for this school in a worthy manner. You will receive benefit from it, I am sure. You will not be overpaid. You cannot get too much in return for the work you bestow upon this subject in your several small towns. It must be to you all, as all good work is, a labor of love. One of the oldest maxims of the law is that "the welfare of the people is the supreme law of the land." It is of prime importance, and especially to you here, that the Board of Health of Vermont took up the work and extended its supreme law for the welfare of her people. It is not the work, but the health officer spends a great deal of time where he gets no compensation. It requires a diligent man to keep up with the scientific knowledge of sanitation that is now within the reach of the health officers.

I was interested in Dr. Caverly's remarks to know that this state was one hundred and eight years old before we had a board of public health. The first law that was passed with reference to this public health subject was that passed with reference to the public health at Bennington in 1807 and it had reference to small pox. It provided that the selectmen should see that the disease did not spread. It provided that the selectmen should furnish a house or place where those who had the disease could be removed and also that they were to be removed there. The selectmen were to furnish them a physician or medical attendance. That law further provided that if any person should give or take that disease—that is, the diseased person or infected person, in the state, without the authority of the selectmen, they should be fined fifty pounds. The present statute is practically the same as regards this point. That statute also provided that if any person in this state knew of the instance of that disease and failed to report it, he should be fined ten pounds. The present law says the heads of families and health officers shall report such disease.

There is another phase of the good the public derive from the public health rules and regulations. There is a great deal of discussion going on through the country to-day with the view to making the boards of health a national organization. There are some fine legal points involved. We have heard a great deal of law in this country with reference to police regulations with public health since the adoption of the fourteenth amendment. Soon after the war, the best people of this country wrote into the Constitution of the United States the Declaration of Independence. The first section says that no state shall deprive any person of the right of life, liberty or happiness without due process of law. There have been cases repeatedly before that tribunal involving this question of police regulation in the several states, and it has been uniformly held that the legislature of a state cannot bargain away the right the people have to the enjoyment of public health. The legislature cannot do it. The people cannot do it. Their servants cannot do it. It comes up in this way. For instance, we take the case of the Fertilizer Company vs. The City of Chicago. The company had been chartered with the right to set up a plant just outside

the city. The city passed an ordinance prohibiting them from carrying on such a business. Here they were—they had a contract with the legislature of the state. This suit was carried eventually to the United States Court, and it was decided that wherever the public health is concerned, the obligation of a contract is not involved, for the welfare of the people is the supreme law.

Again, relating to public health, it is said no man can practice medicine in the United States if the state has passed a law requiring each and every practicing physician in the state to have a diploma. For instance, Mr. Dent of West Virginia had no diploma, and thought he was capable of practicing medicine. He took his case to the United States Court and they found that wherever public health was concerned, that the state had the authority and the power to make laws which would serve the best ends of the people.

To some, perhaps, it would seem to conflict, if we had a national board of health, but it seems to me it would be a great help. It should not stop but should help on and supplement it. If we had a national board of health, and New Hampshire did not care about the small pox in Manchester, Vermont, through this national board of health and its efforts, we could compel New Hampshire to observe the strictest rules. They have had 376 cases of small pox that have been reported. Our State Board of Health will tell you that we have it in this state, largely traceable to New Hampshire. Now, not all of these cases are reported. That number, 376, are those cases which have been reported to the Department at Washington or the Department which is called the Marine Hospital Service.

Dr. J. H. Gardner of the *North American Review* made this statement with reference to the Federal Board of Health. He said the United States government now quarantine against Asiatic cholera, yellow fever, typhoid fever and bubonic plague. Since the quarantine laws were established and within the last twenty years, the number of deaths in the whole United States from those diseases did not exceed one thousand a year.

There are, however, yet infectious diseases that the United States does not quarantine against, those of tuberculosis and diphtheria. The annual death rate is one hundred and fifty-seven thousand. It seems to me that the Federal government having the authority to take up this matter, it would be worth while to have them begin and help. I agree that Vermont has taken the lead in this matter as she has taken the lead in a great many other things. You are obliged to take your microscope when you look on the map to find her, and she has not only been ahead in promulgating rules relating to public health but in many other ways has she shown her love for human life. The state was honored at the Paris Exhibition by having an exhibition made by the State Board of Health—a bacteriological exhibit of the appliances of the laboratory of hygiene, which stood practically at the head.

As I said to you before, I did not come to you to make an address, but simply for the purpose of showing you, saying to you how interested the whole state was in this subject matter, and let me say, in conclusion, that

it seems to me that an ounce of prevention is worth a pound of cure and that the good health of this state, like the lowlands of Holland, is preserved by the protection of the first break in the dike and its immediate suppression. It is true that the present scientific methods are not easy to understand, some attempt to grasp them, but this state has already made grand progress in these lines. You will go back to your several towns better equipped for your work, and you will also be enlightened in the duties which the State Board has planned for you and which it is your duty to do for every person in this state.

We see a great deal about the representation of the state of Vermont, and I hope I shall never live to see the day when Vermont is not represented by towns. They say we ought to divide up the state according to population. The House of Representatives in Washington is based upon the population of the United States. The Senate is not. That represents the state. In our state it is reversed. The House of Representatives represents the towns, and so long as it continues to do so, so long will we have good legislation which is made up by the combined efforts of the common men.

I thank you, gentlemen, for your kind attention.

---

ADDRESS BY HON. J. A. DEBOER, MONTPELIER.

The statistics of the eleventh census of the United States were graphically published in 1898. They give a comparison of the death rate per thousand of population, for eight of the so-called registration states, including Rhode Island, New Jersey, New York, Massachusetts, Connecticut, New Hampshire, Delaware and Vermont. In the first seven the death rate was from eighteen to twenty-two, while Vermont showed the gratifying ratio of less than seventeen per thousand. The government statistician undertakes to explain this favorable showing for Vermont as due to two things, the small proportion of children and of urban population.

Whatever cause be assigned, the fact is that Vermont enjoys to-day a low average death rate, computed on population, and this mortality experience must be considered a valuable asset of the state. If, as Phillips once suggested, "physique is half the battle" in the professional and commercial success of individuals, it is also true that a high average health record among the people of a state is one of the great determining factors in the wealth and happiness of its citizens. It is, therefore, the duty of the state to take care of and promote the health of its people just as truly as it is the aim of all governments to protect their property and lives.

It is folly, in securing this object, to neglect acts of prevention and to dream only of applying cures when the danger is already nigh. Where masses of men live together the state must take note of the fact and deliberately insist, in some way, that the people shall have pure air, pure water, pure foods, good sanitation and ample light. If they fail to get this much, the result will inevitably be bad public hygiene. Disease will increase

and unhappiness and loss of wealth must result. The problem can be solved by the individual to the extent of his home but the state or town can alone solve the question for the community.

In respect to these matters much has already been done and the work is fortunately in good hands. The extent to which health matters have been given attention is humorously measured by the day's poet in a recent Des Moines paper:—

“ We have boiled the hydrant water,  
We have sterilized the milk,  
We have strained the prowling microbe  
Through the finest kind of silk.  
We have bought and we have borrowed  
Every patent health device,  
And at last the doctor tells us  
That we've got to boil the ice.”

The State Board of Health to-day works on the basis which an improved and greatly enriched science supplies. Laughs and sneers at the demonstrations and the experiments of true science are somewhat out of date. The science and the art of medicine are themselves by no means perfect but these are charged, very largely, with the question of public and private health, and any tendency to check or impoverish their opportunities under the guidance of state authority is lean wisdom and poor economy. It is not at all strange, however, that there should be objections, but mainly because it is a fact that people generally do not understand the case and do not appreciate the extent of the progress which has been made in recent times and the points to which exact knowledge of hygiene has been drawn. Much good would undoubtedly result if all information on the subject could be popularized and disseminated, not spasmodically, but continuously and with a plan. There are always new people to educate and a majority opinion is necessary.

We are apt to place wrong values on two sets of facts, at least wrong relative values. Thus people are taught dates and facts of war. Few recall, or ever knew, that Priestly got oxygen for the first time in 1775 and recognized it as such by heating mercuric oxide. That revolutionized chemistry. As the late Dr. Fiske said, “Men's thoughts were dephlogisticated from that time forth.” Precisely. The world suffers much, usually from a wrong working hypothesis; likewise from impatience, from inability to give men time who are working at problems where the way is uncertain and the difficulties great. Yet note what splendid progress has been made. Upon the mere basis of oxygen and the indestructibility of matter, physics, chemistry, and the related sciences have developed brilliantly, and the people, without class distinction, have received the most liberal benefits from their application in the arts. Progress in this kind of work ought to be energetically fostered, encouraged and sought, even in a state like our own, where the mountains and the streams conspire to bless mortality, if we do not destroy them. The average citizen may not have the opportunity to learn these things, but the state ought always to stand in possession and

its statesmen cannot fail, without breach of morals, to sustain every reasonable enterprise and form of work which will tend to increase our knowledge and give us a better state of public health.

An able and successful doctor, now dead, once said to me, "I don't take much stock in this bug theory." I replied to that, "Well, I am not expert in such matters, as you ought to be and no doubt are, but it seems to me that the time must come when the stock in bug theories will be quoted at a premium."

It is impossible to wipe out the demonstrations of the last century's work in science, which knowledge is now conscious knowledge. It is true, however, that the mass of people do not understand and, therefore, do not appreciate the germ theory of disease and so will not give ready assent always to measures calculated to prevent their spread upon that basis. Others constantly stand in awful dread of germs. Either way of looking at it emphasizes the wisdom, for state purposes, of popularizing and spreading knowledge on the subject. I believe the best possible results will flow from such a course and suggest the uses of publicity in this connection. The idea of the Board to issue a publication was most excellent. Experimentation, application, results and publicity, all popularized, will prove of great service to the people in the long run.

This is the first and main suggestion which I have to offer, the paramount importance of public hygiene to the state and the service which widespread publicity will confer in the solution of its problems. The means for doing this work should come from the state, which ought not to wait on private effort, but should maintain and extend the means which it already provides by law.

This question of public health interests me peculiarly in connection with the thought of death and the influence upon human happiness and prosperity everywhere of that certain thing. In some sense its mystery and its subtle influence on the race is well indicated in the sixty-fourth verse of the Rubaiyat:—

" Strange, is it not? that of the myriads who  
Before us passed the doors of darkness through,  
Not one returns to tell us of the Road  
Which to discover we must travel, too."

Death and the sufferings which precede and follow death have been things of which the race not only stands in ignorance but in fear. There are the compensating influences of pride and moral courage, and these usually enable men to bear disease with much patience and even to conceal it successfully from their friends, but it must be apparent to all that one, if not the first, great cause of poverty, sorrow and failure in the lives of men is the fact and fear of disease in individuals or in related individuals. This, in turn, made people dependent through the centuries upon certain classes of men, variously called priests, magicians, medicine men, physicians, etc., the popular idea being that their help and skill must be called in on the slightest provocation. It is easy to conclude from this that those communities are blessed which possess well qualified, intelligent and faithful practitioners



of medicine, but it also suggests three things, the marvel that governments have not given a more positive attention to disease and its effects upon the people, the wisdom of charitably but definitely placing rational limits on practice, and the public mistake of not taking steps to make more individuals able to be the guardians of their own health by distributing knowledge about themselves.

Of course progress in all these particulars has been made. I merely wish to emphasize the claims of the general subject and the wisdom of pushing state work in this direction with all possible practical speed. Our education certainly ought to include a more complete knowledge of ourselves and so lead to greater independence in respect of our living and in the care of our families.

Emerson says, in his lecture on "Prudence," I think that "health should be universal." It is too much to expect but not too much to work for and to work towards. The house, saved, for however brief a period, from conversion into a temporary hospital, is greatly benefited. The mother, saved from compulsory service as a nurse in that hospital, is greatly blessed. It is not intended to convey the suggestion that there should be a conference of duties to the state. For it is natural that the family should, as a rule, look after its own sick, next, kindred, and, last of all, strangers; but what I mean to point out, trite and commonplace though they be, are these facts:—

1. That people, in fact, live in fear of disease.
2. That this, in its direct and indirect bearings on their lives, detracts from individual happiness.
3. That disease itself is directly responsible for the comparative poverty of many homes and the maintenance of that condition.
4. That, while epidemics and scourges are to-day much less frequent and potent, disease itself has not been reduced in all of its forms to practical recognition.
5. That, notwithstanding the progress already made, it is the foremost work of science to diminish the ratios of invalidity and death.
6. That health touches every man so nearly, is so essential to his happiness and success, that knowledge on the subject should not remain the property of the few, but, so far as possible, be made the property of the many.

Now it is very probable that these views of a layman may be wrong in some particulars and, therefore, I should hesitate to supplement them by referring to a general detail. It seems to me that some things may be considered as satisfactorily established. For example, that the essential matters to be cared for are pure air, pure water, pure foods, cleanliness of towns, of homes and of persons, and that, if all this can be everywhere achieved, we may confidently look for good public hygiene. The influence of personal habits, the care of children, care of the sick, attention to burials, good health regulations are correlated subjects. All deserve the most constant and most serious consideration, and, so far as practicable, knowledge in full detail of all these matters should be popularized, distributed

and applied, in order to ultimately secure the greatest benefit in this work of individual coöperation.

In closing these few remarks, it may perhaps be right to ask what account should be taken of the future, *i. e.*, how will the development of the race and particularly of our own people, most likely express itself? Any attempt to answer this important question must necessarily be projected on a broad and liberal basis. It seems, however, that a review of the history of man everywhere sustains the conclusions on this subject of Herbert Spencer, namely, that this evolution of the race will not be in strength, because mechanics supplants brute force; nor in agility, because that is already supplanted by other forms of energy; nor yet in dextral skill wholly, but in part, the new tools always calling for more delicate manipulation. It will be largely in intelligence and morality. For the purpose of living is to live, and intelligence, which is in progress, will teach man to conform to the true conditions under which life will best thrive. There will be finally less ignorance of these conditions and more self-regulation and a greater attention to all the duties of the social state. This tendency will be towards altruism and to the highest possible forms and amounts of life. Our state in taking care of its own will contribute its moral share to the development of the rest. I may fairly congratulate you, who are to-day charged with public responsibilities in this work, upon the important nature and high calling of that work, and express the hope that, under your guidance, the evidences of our faith in the need and virtue of that work may constantly grow and accumulate within our state.

---

### SKETCH OF THE LIFE OF DR. JO H. LINSLEY.

The opening of the third annual school of health officers emphasizes anew the loss which the public health interests of our state have suffered in the death of Dr. Jo H. Linsley. The idea of such a school was, as far as I know, original with him; certainly its successful accomplishment here in Vermont was very largely the result of his energetic labors.

In planning the first school, two years ago, one incident especially forces itself upon my memory at this time. Dr. Linsley insisted that his name should not go upon the program of the opening session. To-night it is our melancholy duty, but none the less imperative, to give his name a place in our proceedings.

Dr. Jo H. Linsley was born in Windsor, May 29, 1859, the son of D. C. and Patty Hatch Linsley, and the grandson of Hon. Jo D. Hatch, for whom he was named. An early attack of rheumatism, from the effects of which he seems never to have fully recovered, seriously interfered with his early education, and ever after handicapped him in his professional life. In consequence of pulmonary hemorrhage he was sent West at sixteen years of age. Returning sufficiently recovered, he took up the study of

medicine with Dr. A. P. Grinnell of Burlington. Completing his medical studies he took his degree from the medical department of the University of Vermont in 1880. He was early associated with the late Dr. S. W. Thayer in practice. He acted as city physician and health officer in Burlington, and in the latter office first demonstrated his capacity to deal with the practical problems of modern sanitation. His work in connection with a small pox outbreak and in securing efficient plumbing ordinances here was characterized by many of those qualities which he afterwards displayed so conspicuously in the state work. Another severe illness in 1884 nearly proved fatal.

Later, with keen foresight, observing the trend of modern medicine, he took up the special study of pathology and bacteriology in New York city, devoting himself to this work with great thoroughness. He soon held responsible positions in several New York institutions, notably St. Luke's hospital and the Post Graduate medical school.

In 1890 he went to Berlin and studied under Koch. It is easy to conceive that here, under the influence of this master mind, Dr. Linsley received the impetus which started him on his successful course as a bacteriologist.

Returning, he had only been a month in New York before he was sent back by the Post Graduate School to get information at first hand in regard to Koch's tuberculin, then the sensation of the scientific world. This information he used in a lecture before the New York Academy of Medicine and in preparing the lymph in his laboratory at the Post Graduate. During his connection with the Post Graduate School, and while devoting himself daytimes to his laboratory work, he spent his evenings translating Fraenkel's standard work on bacteriology.

He also at this time and later until 1899, lectured on pathology and bacteriology in the medical department of the University of Vermont. An illness again in 1891 compelled him to abandon his New York work, and after partially recovering he devoted himself to teaching classes here in his private laboratory. Later a laboratory was equipped for him at the medical college.

Again ill health compelled him to take a long vacation, and he took a four months' voyage around the Horn, from which he returned in seemingly perfect health.

He then took up his work of teaching again with characteristic enthusiasm, and it is safe to say that the graduates of this school received as thorough instruction in his department as was possible with the facilities and time allotted to these important branches.

Thus we see that Dr. Linsley's life was made up of periods of enforced idleness, due to ill health, alternating with periods of exhausting work.

The science of sanitation is based upon that of bacteriology. As bacteriology has developed during these last years, sanitation, preventive medicine, has come to rely more and more on its findings. In dealing with the everyday questions of practical sanitation, Boards of Health depend quite largely upon the bacteriologist. So the laboratory of hygiene has made for itself a place in the scheme of practical sanitary science. For purposes

of diagnosis and to give point and efficacy to prevention, appeal must usually be made to the laboratory.

Realizing their needs in this direction, the Vermont State Board of Health naturally turned to Dr. Linsley for advice and assistance in its work. With its resources, as then limited by law, the questions involved were full of perplexities. Dr. Linsley, with characteristic enterprise, undertook the experiment. He agreed to make examinations of suspected cases of diphtheria and typhoid fever for the physicians of the state, provided the Board would reimburse him as far as possible for his necessary outlay for equipment. Thus this work began in a modest way on February 1, 1898. The results, as you are aware, met our most sanguine expectations. Aside from the aid directly given to preventive medicine in the state, it furnished our people, and especially our physicians, an object lesson in exact sanitary methods. It is scarcely necessary for me to relate the results, legislative and otherwise.

We all remember with what enthusiasm and courage Dr. Linsley entered on this work; how he gave his best efforts to the success of this experiment; how indefatigably he labored, against seemingly insurmountable obstacles, to interest good men all over the state in the cause; how he carried his microscopes and specimens to Montpelier to reinforce his arguments; how he secured, with practical unanimity, from our legislature an appropriation for this work that, six months before, it would have seemed foolhardy to ask for; how he organized from his ripe experience a working laboratory that was a model of its kind; how he still worked on, planning night and day to render it more perfect, of greater and greater benefit to our people. In the spring of 1900 he discovered that he had symptoms of disease that were new and ominous. Still he worked on, devoting himself to securing the means from the last legislature to extend and perfect the laboratory. Sensitive to criticism, conscious of the ultimate benefits which the institution would bring to the state, he chafed under the delays and questionings of legislators, whose duty demanded them to carefully investigate.

His sickness increased with nervous strain, and, although this institution finally received generous recognition at the hands of the general assembly, his health was so undermined that in December he was obliged to go away for rest and change. After a sea voyage into the tropics, he returned to Vermont late in January, only to discover that he was not benefited by his vacation. Finally he was then induced to lay aside all thought or care connected with this work, but too late, for he soon developed meningitis and died at his home in this city February 17, 1901.

Dr. Linsley's professional life covered the last two decades of the nineteenth century, corresponding in time to the wonderful developments of medicine and surgery along the lines of bacteriological investigation.

His specialty brought him into close touch with all that was best in the profession. Under new methods of study and improved instruments, medicine and surgery were undergoing rapid transformation. American scientists were a part of this work and Dr. Linsley threw his best energies

into it. Dr. Jacobi, in an address before the thirteenth International Medical Congress, speaking of American bacteriologists and their achievements, said, "In the face of such results, and such enthusiasm, and such love of work, who is there that still looks down on American medicine and American medical men?"

Dr. Linsley's ruling characteristics were thoroughness, energy or push, and enthusiasm. He usually had a clear idea of what he sought to attain, and once his mind was made up, he labored with indomitable energy to that end. He aimed at the best. He was never satisfied with half-way measures or attainments. Furthermore, he was able to impart to others somewhat of the same enthusiasm and energy which he himself displayed. He was never satisfied to plod along with the crowd. His nervous energy was always reaching out for something new and better. As he was leaving Vermont last December to seek rest and health abroad, I had a few moments' conversation with him as his train passed through Rutland, and though evidently sick, his whole conversation was about plans for improving and enlarging the work of the laboratory. When I ventured to suggest that we be content to do the work that was evidently contemplated by the legislature, and not undertake unnecessary work for a time, with a slight show of impatience, he said, "It isn't my nature to drift along, without trying to make the laboratory larger and better all the time." This remark was typical of the man. And so, sicker than he knew or would admit, he went reluctantly away and finally succumbed, eager to the last to do more in his beloved specialty.

The state of Vermont has been fortunate in having such a native-born citizen who would devote himself to her service. It is safe to say she has had no other so well qualified for this peculiar service. The benefits of this laboratory to the state are not to be measured solely by an improved health-rate. Dr. Linsley secured the establishment and built up an institution that is favorably known abroad. It has given Vermont a name and standing among scientific men, and especially sanitarians, throughout the country, that must redound to our advantage.

As a pathologist and bacteriologist, Dr. Linsley was perhaps without a superior in this country. As an organizer and practical worker, he showed the rarest qualifications. His most enduring monument will be this laboratory and the benefits which must come from it, directly and indirectly, to all our people.

Of Dr. Linsley's domestic life, it is not our privilege to speak at length. He was married in July, 1880, to Miss Nettie Ray, who, with a son and daughter, survive him. Outside his laboratory, his happiest hours seemed to be in his home. Here he seemed always to find the quiet and sympathetic help which his exhausting work demanded. Here at last he went to rest.

## LAWS RELATING TO PUBLIC HEALTH.

By JOEL C. BAKER.

*Mr. President:*—Laws relating to public health are not a new fad in these latter days, devised by cranky reformers to attract public attention and magnify pseudo-philosophers. The ten commandments of God respecting moral and religious obligations are not older in time than that code of sanitary regulations for the health and safety of the Jewish people which Moses, by direction of Jehovah, proclaimed for the government and obedience of the chosen race. We may well be surprised at the minute and particular details which God laid down in the first law relating to health now extant; but when we remember that the law giver was omnipotent and the people to whom it was directed were a wandering people on the way to the promised land, living in the most simple habit, we can but wish that human legislators could apply the same wisdom to the methods adopted for the protection of more complicated conditions of society. The pious Israelite was commanded to observe frequent purifications and cleansings: to isolate those suffering from contagious diseases; to disinfect houses where the plague had prevailed; to destroy infected articles; to avoid the use of unwholesome food and to protect the roof of their dwellings by battlements to prevent people falling therefrom.

From the time of Moses to the present day, the necessity of compelling mankind by law to observe the rules of health and safety has been recognized by every civilized government. This necessity has found expression in those statutes which have had for their object the prevention of disease and the protection of health and safety, and the result has been that those people who have most carefully protected themselves by strict legislation, and who have most rigidly enforced the observance of laws for the promotion of health, have enjoyed the greatest immunity from the ravages of plagues and pestilence; while a neglect of proper precautionary measures has resulted in periodical decimation of the population by the scourge of communicable disease.

It needs no argument to prove that the highest welfare of the state is best subserved by protecting the life and health of the citizen by laws which will compel the ignorant, the selfish, the careless, and the vicious, to so regulate their lives and so use their property as not to endanger the lives, the health, or the property of others. The state has the right to enact such laws as will accomplish this purpose, even where their effect is to interfere with individual freedom, and the untrammelled enjoyment of property. Courts of justice have always recognized this right, and have upheld the validity of laws for the efficient prevention of diseases dangerous to the public health, or the warding off of injuries in dangerous places or from dangerous structures, and, when necessary, have thereby curtailed the liberty of individual action in respect to the manner in which the citizen shall live, or in which he shall use the things belonging to him.

The principle which forms the basis of this right is that every man owes a duty to the public, to so regulate his life and the use of his property as not to imperil the life, the health, or the safety of his fellow man. The social compact which every person must enter into when he undertakes to live in community with others, is that he will surrender all that part of his personal liberty which is necessary for the public good and the prosperity and safety of that society of which he forms an integral part; and that he will exercise no inherent right to the injury of the community. A man may live and die as he pleases, so long as his life or death does not endanger the life or well being of others, but when that danger point is reached, it is the right and duty of the community, represented by the law-making power, to restrain him so that his life or death shall not menace the life, the health, or the safety of his fellows. The great prime minister of England, Lord Beaconsfield, urged upon the British government the importance of laws for the promotion of health, and remarked that "the health of the public ought to be one of the chief considerations of the statesman." This is not only true, but we may go farther and say that the purposes of government are defeated unless the most efficient legislation is enacted to that end and vigorously administered.

The legislation for the protection of the public health and safety has been progressive. In the earliest times under the theocracy, when the habits of life and business were simple, and the people lived in the open air or in the simplest of dwellings, but little was required except personal cleanliness and abstention from unwholesome food, and proper isolation of persons affected with communicable disease. The few rules laid down by the law giver were adequate, but the complexity of modern living, and the new methods of business, the accumulation of wealth and the perils of luxury, call for more extended and careful legislation to meet every possible danger arising from new conditions. The introduction of steam as a motive power made it necessary to enact laws for the inspection of steam boilers and regulation of their use. The application of electricity to mechanical purposes requires special legislation for its employment in order to protect the public from the dangers incident to its use. The massing together of people in hotels, tenements, factories, and other buildings has made it necessary to adopt regulations compelling the owners to build safely, and to provide fire escapes, protected hoist-ways, sanitary plumbing, and other life saving appliances, and the learning of the medical profession and its diligence in making manifest the causes and precautions for prevention of disease, lays additional duties upon legislators, not only to meet the new conditions of life, but to adopt the means which science and medical discovery have demonstrated to be best adapted to the common weal. The development in modern times of the germ theory has revolutionized the laws of sanitation and brought into the law new agencies for the protection of public health, and by reason thereof we are to-day confronted by a "condition and not a theory," which makes a deep scientific research, and the application of modern methods and philosophic principles as requisite in promoting public health and protecting the people from

disease, as we have been accustomed to regard the laws against personal danger from assault, and the execution of laws to prevent crime. In the bright sunlight of scientific sanitation it is now as much a crime to expose a community to death by allowing disease germs free access to their homes and persons, as it is to expose the same community to the dangers of death by riot, assault, or the dagger of the assassin.

The protection of health is a police power, and is conferred upon the state for the public safety. It rests upon the maxim, *Salus populi est suprema lex*, and deserves not only the highest consideration of the statesman, but also the best thought of the philosopher, and the deepest study of the learned and philanthropic.

We are assembled upon this occasion to carry out the provisions of the laws of our state. It is a meeting called by the State Board of Health under that provision that the Board shall meet at such times and places as in the judgment of the Board the public health and safety require, and each health officer of the state is to participate in these meetings under the requirements of the somewhat vague statute of 1900, "that when called by the State Board to attend any meeting of said Board he shall receive his expenses and the same per diem as the State Board, from the town, village or city for which he acts, unless he is in receipt of a stipulated salary." There is represented in these assemblies the combined experience and much of the wisdom that has been developed in Vermont under its laws to protect the public health and safety, and we may well expect that from this school of health officers there will go into every part of the state an enthusiastic appreciation of the topics here discussed that will carry more earnest work, and broader views to the protection of health, and that in due time we shall find the legislature responding to the growing public sentiment by laws making more effective the work of this board, and enforcing all those regulations which the public good demands.

The State Board of Health is not invested with large executive duties. Such of these as are provided are largely relegated to local boards and health officers. The statute, in defining the duties of the State Board, says it shall take cognizance of the interests of the life and health of the inhabitants of this state; shall make or cause to be made sanitary investigations and inquiries respecting causes of disease, especially of epidemics, and the means of preventing the same; the sources of mortality, and the effect of localities, employments, habits, and circumstances of life on the public health; and when requested, or when in their opinion the sanitary interests of localities require it, shall advise with municipal officers in regard to the location, drainage, water supply, heating, and ventilation of public buildings, and the drainage and sewerage of towns, villages and cities. The duties required by this section are academic, and may be of great value. Knowledge upon every important and practical subject is the basis of successful work, but the Board should have the power of applying remedies which their investigation shows them to be essential in removing causes of disease and preventing epidemics. If the Board is worth having, it ought to have the power to enforce its advice to municipal officers



in regard to the drainage and sewerage of towns, villages and cities. It will be seen, however, that while the Board is required to take cognizance of the interest of life and health, it cannot compel any community to put in a water supply or adopt or change a system of sewerage. It can advise municipal officers, but it has only the weapons of moral suasion to make its advice effective. While the amount of the salary of each member of the Board and the method of drawing it is particularly and specifically prescribed, the executive functions of the Board are vague and, to say the least, weak in view of the herculean work required by the public welfare. As a bureau of information and a valuable counselor the State Board of Health is worth all it costs, but its usefulness would be largely augmented if its powers were so enlarged that it could, in specific cases, adjudge what should be done, and have the strong arm of the law to enforce and carry out its judgments in such reasonable manner as will meet the exigencies of that case. Power is given the Board to promulgate and enforce regulations for the better preservation of the public health in contagious and epidemic diseases, and regarding the causes which tend to their development and spread, as they judge necessary; and then comes a sanction for the enforcement of the regulations in this class of cases in the provision that if a person neglects or refuses, after having been duly notified in writing to comply with such regulations, he shall be fined not more than one hundred dollars and not less than twenty-five dollars. The regulations made by the Board under the power in this statute have all the effect of acts of the legislature, as it is always recognized that the legislature may delegate to boards of health the power to enact and ordain sanitary by-laws and rules that shall have the force of law. In all cases of contagious and epidemic diseases, this Board has power to promulgate such regulations as they judge necessary, and not only as to the diseases themselves, but also regarding the causes which tend to their development. Once this statute would not have been as broad as it is now, as the tendency now is to call every ill that flesh is heir to, a contagious disease, and the law would be construed liberally for the public good. When valid regulations have been promulgated, they are binding upon all officers and people of the state, and the penalty is denounced against a person neglecting and refusing to comply with the regulations. The regulations, in order to be valid, must be for the better preservation of the public health in contagious and epidemic diseases, and regarding the causes which tend to their development, and within that authority it must be reasonable, fair, and impartial, and in harmony with the Constitution, Bill of Rights and statutes of the state. Under the policy of the state, the rights of her citizens are generally protected by the constitution, and where the legislature has acted upon a subject its statutes could not be repealed or restricted, even for the protection of the public health, by any board under a delegation to make rules and regulations. When regulations are promulgated, that is, made and published, they must be obeyed, but a publication must be made in a particular way before the penalty can be inflicted, and that is, the delinquent must have been duly notified in writing. When this is done and the regulation

is not complied with, the penalty is incurred and the courts will enforce it. It is as binding on health officers as anybody, and the Board should be most inexorable in requiring obedience from its own appointees, the health officers, and from local boards of health.

The regulations which the State Board of Health are authorized to make must be appropriate to accomplish their purpose; they must have a clear and substantial relation to the subject to which they purport to relate. The act creating the Board of Health invests them with powers and authority for the purpose of protecting life and health and preventing disease, and for no other purpose, and those powers and authority are to be exercised accordingly, and the validity of their exercise is to be judged by the test whether they fairly and reasonably tend to promote those purposes.

My attention has been called to a code of rules and regulations of the State Board of Health issued under date of March 1, 1901, and find nothing objectionable in them except article four. The first paragraph of this article declares that whatever renders soil, air, food, water, or other drink liable to propagate or spread disease is declared to be a nuisance, and detrimental to the public health. Article seven provides that local boards of health shall abate all nuisances. It is not the province of any municipal corporation, board of health or other body to define a nuisance, or, as stated by the supreme court of New York, "it is not admissible to suppose that the legislature intended to give a board of health the power to declare in its discretion what is or what is not a nuisance or to define the acts or things which shall be deemed to be nuisances." The legislature cannot delegate to any body of men the power to declare what is or what is not a nuisance. Such power would be equal to a power to declare what should be a criminal act; because it is a crime to maintain a nuisance, and if the legislature can delegate to individuals the power to define a nuisance, it can delegate to them the power to make acts criminal which are not so by law. It follows, necessarily, that while boards of health may under legislative authority make rules for the preservation of the public health in contagious and epidemic diseases, it cannot redefine nuisances, nor make a thing a nuisance which is not so recognized by common law or statute.

The common law defines a nuisance to be anything that worketh hurt, inconvenience, or damage. In one instance the legislature of Vermont has said that every saloon, restaurant, grocery, cellar, shop, billiard hall, bar room, every drink place, or room used as a place of public resort, and every building or erection of whatever kind, or the ground itself where intoxicating liquor is unlawfully sold, furnished, or given away, or kept for furnishing, selling, or giving away unlawfully, and the furniture, fixtures, vessels and contents, and every place or room used or resorted to for gambling, shall be held to be a common nuisance. Also if any railroad shall leave any hand car, or other nuisance within the limits of the highway, it shall be punished. It appears, therefore, that the regulation of the State Board of Health that local boards of health shall abate all nuisances is too broad, and is entirely beyond its authority. I am of the opinion, also,

that this subject has been covered in prescribing the duties of health officers and local boards of health, and is not a subject for regulation by the State Board.

In the charter of cities there is usually a provision for a water supply for public and domestic purposes, giving authority for providing such supply as well as public sewers at the public expense through the power of taxation. In towns there is no such authority except where, by special legislation, or through special village or fire district charters, it is given. The right of the state or local board of health to use money is confined to that given in express terms. They have no power to raise money by taxation or to require municipal improvements, except to the limited extent specified in the laws for the creation and government of such boards, and I think it clear that the Board cannot compel a town or city to put in a public water supply, or to adopt or change a system of sewerage. That is beyond the powers delegated by the legislature and perhaps beyond the constitutional power of the legislature itself.

As heretofore stated, the local boards of health are given the executive power of enforcing sanitary regulations and laws. The State Board is required to appoint a health officer for each town, village and city in the state and give him a certificate of his appointment. The health officer, with the selectmen of the town, the trustees or bailiffs of the village, or the aldermen of a city, constitute the local board of health. The health officer is the executive officer of the board and can only be removed or controlled by the State Board. He is required, in connection with the other members of the Board, to make sanitary inspections whenever and wherever he has reason to suspect anything exists which may be detrimental to the public health, and as a public officer he may enter any house or other building in the performance of his duties, and as the executive officer of the local board he shall make orders in writing for the destruction, prevention, or removal within a specified time of all nuisances, sources of filth, or causes of sickness. The validity of this order rests upon the same principles heretofore discussed in reference to regulations of the State Board, that is, it must be reasonable and appropriate to accomplish the purpose designed, and must be explicit and in harmony with the law and the duties imposed upon the local boards of health. Perhaps as good an illustration of this subject as can be found is the case of *Verder vs. Ellsworth*. In that case a vacant lot in a thickly settled portion of the village of Rutland was surrounded on two sides toward the street by a high board fence used for posting bills. The lot was on a prominent corner, and some of the neighbors claimed that the posters were offensive, though they were not immoral or obscene, but taking advantage of the fence the lot was used in a way that made it a nuisance. It was made a dumping ground and was used by loafers and the idle as a place where they answered the calls of nature, and it became more or less a menace to health, and as it was overlooked by the upper floors of several dwellings, vigorous complaint was made to the trustees of the village, who had authority under the village charter to abate nuisances. The trustees adjudged the use of the lot to be a nuisance.

and proceeded to abate it by tearing down the fence after giving notice to remove it. The court held the act of tearing down the fence to be a trespass and not justified, as it was not the thing destroyed that was the nuisance, but what was done on the lot behind the fence, and the ruling adopted might, if allowed, justify the tearing down of an expensive church, because something behind it was immoral, indecent, or tended to impair the public health and safety. The health officer, in making his order for the destruction of nuisances, sources of filth, and causes of sickness, should strike at the thing itself, and make his order explicit and exact, and not undertake to promote the public health by the destruction or removal of some harmless thing, although thereby he indirectly accomplished what was desired. When the health officer, as the hand of the local board, makes his order, the law provides a penalty for disobedience of such orders. It imposes a fine of not more than one hundred dollars, and not less than five dollars, for each refusal or neglect to comply with the order, and the health officer may execute the order at the expense of the municipal corporation for which he was appointed, and that expense may be collected of the person who ought to have executed the order in the first instance. Question has been made as to how far the health officer is under control of the local board and how far he is an independent officer. This question must be answered by a critical reading of the statute, and there are some incongruities in the law, and some were removed at the last session of the legislature. As the law now stands, in every municipality where there is a public sewer, every owner of a house or building abutting on a street in which there is a sewer, must connect his building with it, and, when deemed necessary by the local board, shall provide said house or building with plumbing in accordance with the regulations of the State Board of Health, and make necessary connections between this plumbing and such public sewer. All orders under this statute must be signed by a majority of the local board, and when valid under the rules heretofore suggested, a refusal or neglect to comply subjects the land owner to a fine of not less than ten nor more than one hundred dollars, and the local board may execute the order at his expense. This section places all power of execution and judgment in the local board, subject to an appeal to the State Board, and of course subject to decision of the courts as to fines, recovery of expenses, and all actions that may arise in enforcing the statute.

The health officer is a member and the executive officer of the local board of health, and he makes sanitary inspections whenever and wherever he has reason to suspect anything exists detrimental to the public health. Although he makes these inspections in connection with other members of the board, they are made on his judgment. The power to enter private property for the purpose of inspection is specially given to the health officer, and he needs no sanction of the local board. He makes his order for the destruction, prevention, and removal within a specified time of all nuisances, sources of filth, or causes of sickness, and he sees that the orders are executed. In this latter part of his duty, he is an independent officer and may act as the exigencies of particular cases may require, and act

promptly without waiting to assemble the local board. When nuisances, sources of filth, and causes of sickness impend over the head of a community, the health officer should at once apply the remedies which the law has placed in his hands for the protection of the people, always having due regard for the rights of all. Due process of law means such proceedings as the law provides, and such as the exigencies of the case require. Like every other exercise of the police power, the officer should be prompt, discreet, and immediate in putting in operation the powers in his hands necessary for the protection of the public.

In case of infectious and contagious disease dangerous to the public health, and they all are, the health officer upon notice shall investigate far enough to determine, if possible, the source or cause of the disease, institute means of prevention or restriction in the name of the local board. Here he acts as a public officer and is authorized to use the name of the local board without its consent. This authority is manifestly given from the necessity of the case, and to allow immediate action, and should be exercised with discretion and good judgment. In view of the importance of the interests confided to the care of the health officers, the laws conferring these powers receive a liberal construction in aid of the beneficial purposes of their enactment. The duties imposed are commensurate with the powers given, and while much latitude of discretion is left them in the exercise of these powers, the strict and faithful performance of purely ministerial duties, whether prescribed in general or specific terms, may be enforced by mandatory writs of the courts, at the suit of any citizen having an interest. On the other hand, no court will compel any act which rests in the judgment or discretion of an officer.

The statute has given boards of health special jurisdiction over the sanitary condition of school houses. It is made the duty of local boards of health to make, under the direction of the State Board, a sanitary survey of each school house, and report the same to the State Board, and also to report to each March meeting of towns the sanitary condition of school houses. It is made the duty of the State Board to issue a circular letter to the local boards giving the best information as to lighting, heating, and ventilating school houses, and every body must conform to the regulations of the State Board in respect to lighting, heating, ventilation, and other sanitary arrangements, in all school houses built subsequent to February 1, 1897. There can be no subject where sanitary science should be applied more strictly than in and about school houses. The law cited above is very good as far as it goes, but it falls short of what the necessity requires where it leaves the old, illy lighted, unventilated, unsanitary school houses, with their noxious and unhealthy out-buildings, to be used as a prison pen for the children of the state, so long as the buildings can be kept standing. I hope the State Board of Health will go to the full extent of their power under this law, and that their report to the legislature will call attention to this subject, and enforce by cogent reasoning the necessity of proper lighting, ventilation, and sanitary arrangement of old school houses as well as new ones.

I am asked to discuss the question, Have local boards of health authority to close schools and churches in the presence of epidemic disease? If the occasion was one that made that course necessary and it was the proper and reasonable thing to be done, I should answer, Yes. The State Board of Health may promulgate and enforce such regulations for the better preservation of the public health in contagious and epidemic diseases, and regarding the causes which tend to their development and spread. This is broad enough to allow a regulation for the closing of schools and churches if necessary and proper. The health officer in any locality shall, upon receiving notice of a case of infectious or contagious disease, dangerous to the public health, investigate far enough to determine, if possible, the source or cause of the disease, institute means of prevention or destruction in the name of the local board. Now, if necessary and appropriate that schools should be closed, churches kept closed, or a limited territory be quarantined, those measures of repression are means he may institute for the public safety, and especially would this be so if it was a regulation of the State Board. It must, however, be remembered that the judgment of health officers is not conclusive upon subjects which interfere with the rights and business of others. While a health officer is an officer of the state, endowed with its authority within his jurisdiction, he cannot justify his acts that injure others, except by showing that the facts and circumstances under which he acted were such as to demand the exercise of his power for the public good, and that what he did was reasonable and appropriate to the occasion, and of this the judicial tribunals of the state are the final judges.

There seems to have been some careless legislation relating to the public health in 1900. Section 4680 of the Vermont Statutes prescribed the authority of local boards of health. It was evidently desired to add to it the power of forcing owners of buildings to connect with a public sewer when there was one on the same street, which would have been accomplished by adding a paragraph to the section, but instead it was enacted that Section 4680 of the Vermont Statutes is hereby amended to read as follows: The effect of this form of amendment is to drop out all of the original section not incorporated in the amendment. The provisions of this statute that are repealed are some of them very important, especially in paragraphs numbered two and three.

Section 4680 of the Vermont Statutes provided:

Local Boards of Health shall have authority:

1. To abate all nuisances, destroy, prevent, or remove all sources of filth, or cause of sickness.
2. To guard against the introduction of contagious or infectious diseases, by the exercise of proper and vigilant medical inspection and control of all persons and things arriving in their respective towns, villages or cities from infected places, or which from any cause are liable to communicate contagion.
3. To require the isolation of all persons and things infected with or exposed to contagious or infectious disease, to provide suitable places for the reception of the same, and, if necessary, to furnish medical treatment

and care for such sick persons at their expense, if of sufficient ability to pay the same, otherwise at the expense of such town or city; to prohibit and prevent all intercourse and communication with, or use of, infected premises, places or things; and require, and, if necessary, provide the means for the thorough purification, disinfection and cleansing of the same before general intercourse therewith or use thereof shall be allowed. They may call upon sheriffs, constables and police to assist them in the discharge of their duties.

When this section was in effect repealed by No. 91 of the laws of 1900, section three, it carried with it the feeling that our laws relating to the public health were seriously impaired. These provisions were certainly important and the duties imposed upon local boards of health thereby should be executed by some one. It may, however, be questioned whether local boards of health, who owe their position to the fact that they can be elected selectmen or aldermen by popular vote of their towns or wards, are the best tribunal to perform duties that may bring them in antagonism to their immediate constituency. There may have been reason for striking out these powers of the local boards, especially in view of the duties imposed upon health officers. Section 4678 authorizes the health officer to make sanitary inspections whenever and wherever he has reason to suspect anything exists that may be detrimental to the public health; empowers him to enter any building for that purpose, and to make orders for the destruction, prevention or removal, within a specified time, of all nuisances, sources of filth, or causes of sickness, and by Section 4679, the health officer is given full power to execute his order at the expense of the town, city or village, if the person who ought to execute neglects or refuses so to do, and such delinquent person is subjected to a penalty and made liable for all expenses of executing the order.

While the powers given the health officer are in much more general terms than those imposed on local boards of health by the repealed Section 4680, they are doubtless in more efficient hands. The local boards of health must be more or less under local influences, while the health officer is appointed by the State Board, and if he is derelict in his duty or weak in administration, he may be removed by the same power that appoints him. And it is doubtless better for the public service that the State Board shall have as much power in the premises as is consistent with the doctrine of home rule that in these days has become so dear to the hearts of each organized community. It is the true policy that the public health is, and ought to be, a matter of state concern and should be under the direction of state officers.

The quarantine regulations placed in the charge of the health officer are contained in the words that "he shall institute means of prevention and restriction." It is desirable that this power should be more explicit, but with the liberal construction that would be given for the public good, any means necessary and adequate for the case in hand would be sustained and enforced. The governor is also allowed to institute and enforce quarantine regulations against infectious or contagious diseases coming from another state or country, and he can delegate that power to the State Board

of Health. This regulation may, if reasonably necessary, go to the extent of prohibiting all intercourse with the interdicted state or country. Interstate commerce is put by the federal constitution under the control of Congress, but when danger to the public health is involved, the states may protect themselves from immediate and impending dangers and the federal authorities and courts recognize the application of the doctrine that self defence and self preservation is the first and supreme law.

The laws as to registration of vital statistics are quite full and explicit, and the duties of physicians, midwives, city and town clerks, county clerks, and health officers, are full and apparently adequate to secure such full and accurate data as will enable the secretary of the State Board of Health to make his report full, accurate, and sufficient for the legislature to make it the basis for action in its endeavor to protect the public health and promote the public well being. The regulations for burial of the dead or other disposition of the remains of deceased persons, if carefully executed, will overcome all danger from that source, but it requires great care from physicians and health officers, and the giving of the requisite burial permit within thirty-six hours after the death of any person is enjoined under severe penalties, and a burial without permit from a proper officer is forbidden under a penalty of not less than five nor more than five hundred dollars. These permits are issued by local officers and are good from the time of issue, but in case of death from infectious or contagious diseases the law prescribes the necessary preparation for burial and the manner of it, and it is the duty of the health officer to see that the law is enforced. No dead body can be disinterred and removed without the permission of the local board of health in town or city where the cemetery is located. Any person offending against this statute shall be imprisoned not more than fifteen years nor less than one year, or fined not more than two thousand dollars, nor less than one hundred dollars, or both in the discretion of the court. This penalty seems to be sufficient to warrant the belief that the statute will not be wilfully disobeyed.

The assignment to me of the discussion of the laws relating to public health is much broader than I have treated it. I have not endeavored to give attention to any laws outside of those relating to the administration of boards of health and health officers. It will be understood that there are many laws for the protection of life, health, and safety not referred to in this discussion. The laws relating to the internal police of the state, and the whole body of criminal statutes are important in a consideration of this subject, but they are too numerous to even refer to in any single paper. The laws prohibiting the sale of intoxicating liquors and poisons stand upon this basis, as do also all inspection laws of steam boilers, buildings, protection against fires and against personal violence, but the administration of those laws is not committed to health officers, and their discussion would be of no value here. The police powers reserved to the states by the federal constitution are very extended and cover almost every subject pertaining to the safety of the people, and there is no profit in entering upon that field except as it is done incidentally as applied to the statutes



relating to the state and local boards of health. The lives and health of the citizens are the most important subjects upon which the powers of government are exercised, and the people should see to it that legislation is directed to the wisest and most effective means of protection against the dangers arising from life in a community. The absolute freedom of life and action which the individual enjoys and exercises when living alone and in a state of nature must be curtailed and limited for the safety and protection of all when communities are formed. It is a part of the social compact that each member shall surrender all that part of his individual freedom that is necessary for the protection and security of the whole people. The duties of the State Board of Health, aside from its administrative functions, and its power to make rules and regulations, is educational, and the people have a right to look to it for counsel and instruction, and the legislature will be guided largely by its recommendations and counsels, and through its labors we may well hope to secure the enactment of such laws as will promote and protect the state and its people, and secure the peace, harmony, and happiness of all who live under the salutary rule of wholesome laws and government.

*Discussion by Hon. D. J. Foster, Burlington, Vt.*

*Gentlemen:*—I am obliged to present to you my apologies this morning. I greatly regret my being obliged to do this. I have been extremely busy in looking after rural free deliveries and additional mail service and a thousand and one other things in the interest of you and your neighbors and friends, and I have just received a call to which I must respond and which necessitates my leaving at once. I am very sorry for this. I waited in order that I might hear Col. Baker's paper and present my apology in person. I feel that it is not so bad as it might have been, in view of the very able and exhaustive paper that Col. Baker has given you, and it has not only been interesting but has also been exhaustive. I am sure that every local health officer will rejoice to understand that when the Board of Health directs the abatement of every nuisance, it does not mean the nuisance under the prohibitory law, for you would greatly regret to be obliged to provide yourself with a hatchet and make yourself a *Carrie Nation*.

I am interested in this school and I trust it is a permanent institution. It shows the progress made by the medical profession. We outside of the profession are apt to feel that while progress has been and is being made along other lines, that there is really very little progress made in the medical profession. The doctors have a way of following a course and then going into the opposite direction for relief; thus years ago they used to bleed their patients first and then cure them, but now they cure them first and then bleed them. It is for progress this school is instituted. This school should be of interest to the smaller towns particularly. It is in the interest of the health officer of the small village and small town, and you all know the health officer has a much heavier burden in the smaller town than the same health officer would have in the city. The

town has not got educated up to the rules of health and to administration of these laws of health, and so the people look upon these laws of abatement as an infringement on their rights and think they have the right to conduct their businesses as they like and maintain their premises as they like, and so, when the health officers walk in and say in one of these small places, it is a menace to the public health, and undertakes to abate it, he is looked upon as a public enemy instead of being hailed as one interested in the public welfare, and everything that he does is looked upon as an arbitrary proceeding. This school is intended to uphold the laws of the local health officer and assist him in all ways possible, and help him to do better and more efficient work.

I fully agree with Col. Baker respecting the change in the law governing health officers. I also think this last legislature did a good thing when it established this school.

I sincerely thank you for your kind attention and I am very glad to stand before you and look into your faces for a moment and I regret I cannot remain and enter into a more general discussion of the question before you.

I thank you, gentlemen.

*Discussion by Dr. H. D. Holton of Brattleboro.*

I would like to ask a question which has been asked me many times. Section 4678 reads: "He shall, in connection with the other members of the board, make sanitary inspections whenever and wherever he has reason to suspect anything exists which may be detrimental to the public health. He may enter any house, other building, or any premises where he has reason to suspect anything exists which is or may become detrimental to the public health. He shall, as executive officer of the local board, in writing, order the destruction, prevention or removal, within a specified time, of all nuisances, sources of filth, or causes of sickness." Is the health officer to do this on his own motion or apply to his associates of the local board?

*Answer by Col. J. C. Baker of Rutland.*

My interpretation of that statute is that he is a state official as to those duties, and in the appointment of the local health officer, whether he is appointed for town, village or city, he must be an inhabitant thereof, and in making these inspections he must do it in connection with the other members of the board. Suppose he could not get at the other members of the board, I think, as an official of the state, he may do it himself. He may enter into the house or other building; that, of course, means for the purpose of this inspection, and for no other, and the authority is given him as a state official for the performance of these duties. If he finds upon that inspection a source of disease that is a menace to public health, but if the board of selectmen are looking forward to the March meeting and they are to canvass for their election, they say it had better not be done. I think the law puts upon him, when he receives his appointment as health

officer, a certain obligation, which he is bound to carry out as far as his powers will allow, regardless of anything else. That is what he received his appointment for, to abate everything which is dangerous to public health, and the law says he *shall abate* it.

*Discussion by Dr. J. W. Copeland of Lyndonville.*

In a town where there are two or more incorporated villages and a physician living in one, is the health officer of that incorporated village capable of acting as health officer for the others?

*Answer by Col. J. C. Baker of Rutland.*

That calls up a question of municipal corporations. An incorporated village is just as much a part of a town as if it was not incorporated. They are given added powers under the charter of the village. But it is a universal rule to make the village the highway distinction, and the trustees or bailiffs have charge of the highways. The State Board of Health shall appoint a health officer for each town, village or city of the state of Vermont. If they appoint one health officer for the town, he would be the health officer of that town unless another was appointed for the village. That seems to be the reasonable interpretation of the statute. It is a little hard to get at it, but taking the whole section, it appears to me that that is the reasonable construction.

*Discussion by Dr. D. D. Grout of Waterbury.*

In this same section, "the health officer shall in writing, within a specified time," etc., putting it forthwith, would that be sufficient, or must the time be specified?

*Answer by Col. J. C. Baker of Rutland.*

The purpose of this order is twofold. When the order is made, it is for the purpose, first, that the one responsible for that thing should remove it; second, the health officer can cause it to be done at his expense. Now the object of a specified time is that one must have a time specified within which it must be done. If it is very urgent, it must be done as soon as can be. I think that the time should be specified; that is, if you find the source of filth in a house yard that needed cleaning, you should say, abate that nuisance by to-morrow, giving the date, at nine o'clock, or this evening, giving date, at three o'clock, and then see that that is carried out within that specified time. If you say forthwith, that is an elastic expression. It may mean within five minutes, or it may mean a half day or even a week. It depends largely upon the characteristics of the man you deal with.

*Discussion by Dr. L. B. Newton of Bennington.*

Does the town clerk issue the permit for burial where the man dies a natural or unnatural death?

*Answer by Col. J. C. Baker of Rutland.*

This matter is very vague. There is a special officer for that. That provision, as I understand it, is that when the physician files with the health

officer his certificate of the death, the health officer or city clerk shall issue the permit for the burial. That authority given to the town or city clerk is one that I think is misplaced. I think it should be confined to the health officer or to some member of the board of health. It is not compatible to any of the duties of the town or city clerk.

*Dr. Newton.* I would also like to ask, if the health officer lives so far away that it is inconvenient for one to go to his home more than once, could he sign it before it is filled out? It is often that the health officer is liable to be away from home, a distance of ten or fifteen miles, and when one goes there perhaps he has just gone. What are we to do in such a case?

*Col. Baker.* That question brings on another, Is the issuing of a burial permit a pure administrative act or is it one which requires discretion and judgment? So far as its being administrative, any one could fill it out, but if it requires discretion or judgment, it should be filled out only after the use of your discretion and judgment. In cases of contagious or infectious diseases, there are duties which should be done which require much discretion or judgment of the health officer. I think the burial permits should require an examination of the physician's certificate, a thorough examination and possibly some inquiries before it is signed.

*Dr. Newton.* I was going to ask if, in an extreme case, the board of health might sign the burial permit. The reason for this is that last winter a resident of my town died in an adjoining town. They procured a certificate and supposed they must come to me so that the man might be carried back to Dorset to be buried. The health officer lived twelve miles and he had come already six miles to see me. The question then arose whether the board of health did not have the right to issue a permit under those circumstances, and not compel that man to go about from one place to another in order to procure that burial permit. If they have not that right, ought they not to have it?

*Col. Baker.* That case, as stated, is an extreme case. Extreme cases, of course, have to be provided for. You are liable to have cases arise where the person dies in one town and is to be buried in another. The grieved friends have enough burdens placed upon them, and while I am not prepared to state exactly upon that point, I should concur with the idea that they should have that power vested in the boards of health.

*Discussion by Dr. H. D. Holton of Brattleboro.*

Would the certificate from the health officer of Rutland permit the burial to take place in Dorset?

*Col. Baker.* I cannot answer that question. Dr. Holton states that the State Board have held that a certificate properly issued by the health officer of any town was a permit to bury in any town of the state.

*Discussion by Dr. G. R. Sanborn of New Haven.*

I issued a permit for a burial, and after the procession had arrived at the grave, we found that the grave had not been dug deep enough by some

six inches. I had to stop them at that grave until it was cut out deep enough, or what I consider a proper depth, and, since that time, I have issued a rule stating the depth, in my judgment. I would like to ask if what I did was right or wrong.

*Col. Baker.* I think it was reasonable.

*D. J. Morrill.* I live on the frontier and bodies are brought from Canada. How about that?

*Col. Baker.* Don't they have regulations of that kind in Canada?

*D. J. Morrill.* I don't know, but they come across in private transportations. Of course the railroads require the certificate.

---

## HEALTH OFFICERS: THEIR DUTIES AND RESPONSIBILITIES.

By H. L. STILLSON, ESQ., HEALTH OFFICER OF BENNINGTON, VERMONT.

This topic is much broader than appears at first reading. Had the statement been published that to a physician of eminence was assigned the subject, "The Family Doctor: His Duties and Responsibilities," the reader would at once have said, "This is a paper which will interest a large number of people." Whether the thought will so impress the members of this distinguished presence at my hands, remains to be demonstrated; but I believe it possible to so present a theoretical parallel that the suggestion shall remain unchallenged. At the outset I wish to disclaim one point of the suggested parallel, and that appertains to the "powers," rather than to the "duties" aforesaid. Some one or more of the state press scribes have attributed to our good friend, Col. Joel C. Baker, the assertion that a health officer in Vermont had more power than the Czar of all the Russias. While we may doubt the truth of the allegation, every one of us knows positively that the comparison here, between the family physician and the health officer, breaks completely down. It is to be presumed, that were the parallel attempted, with the legal profession as one arm, the case would be thrown out of court. So what are we to do with the health officer himself, that he may possess an acknowledged place among the learned? Three phases should be considered before we pass to the two subsequent, comprised in the words "duties" and "responsibilities," in all, five sub-divisions of our subject.

1. The health officer himself.
2. His progressive education.
3. His training to meet emergencies.

1. *The health officer himself.* The popular opinion that almost anybody is competent to hold the office of health officer is known to be a fallacy by the medical profession, but are the doctors prepared to say that not every physician is fitted for the office? At one time prominent journalists held that the best educated editor was the one who came up through the print-

ing office to the sanctum. Horace Greeley was the example quoted for our benefit in those days. The pendulum then swung to the opposite point, and the consensus of the wisdom of that period declared that an editor must possess a liberal education. Now, as a matter of fact, the self made journalist often found himself sadly deficient in equipment, the college graduate lacked the technical training necessary to success, and a combination of the two ideas has become necessary. Hence, schools of journalism or courses of study have become essential. In theory, likewise, the physician is often thought to possess at first hand the ability to take up the duties and responsibilities of the health officer; but is not the fact of our meeting in a health officers' school, not only once, but twice and now thrice, evidence positive that something more is needed; and that the administration of the sanitary affairs of Vermont, like the journalistic illustration cited, must be perfected by a special school in which the executive shall be taught, and fitted for practice? Looking backward over the nearly a quarter of a century of endeavor in the interest of health, health boards, and health officers in this state, in which I have taken an active part, is it too much for belief to predict that, within the next twenty-five years, no one will hold the office of health officer who has not had a special training for the duties and responsibilities of the position?

2. This leads us, logically, to consider the *education* essential. It being conceded that the characteristics of the individual are normal, he must know the law which regulates his office, and that governs himself as well as those with whom he deals; he must know a good deal about the nature of diseases and the practice of medicine along the special lines presented to him by the responsible office which he holds; he ought to be a more than ordinary student of physics, not the kind taught by generalization in schools, but the sort used by civil engineers, chemists, mechanics, and even superintendents of creameries; he should be a good judge of human nature in diversified aspects, including that of the "father confessor" many times—in these respects equipped as lawyer, doctor, civil engineer, student in the laboratory of hygiene, plumber, milkman, farmer, and clergyman. The health officer's active duties demand skilled knowledge along all these lines. Where is the man to be found who is in possession of these essential qualifications? Do I raise the standard so high that its statement seems prohibitive? Every health officer within the sound of my voice knows by experience that my word is true. One and another of us have each acted in several or all of the capacities named.

3. *To meet emergencies.* We were told by Attorney Cushman last year that each case as it arose must be separately considered, and decided upon its merits; that the relation of the health officers' powers to the subject was what the statute stated, etc. Now, these two obvious conditions create in Vermont a series of emergencies which are not prevalent in many other commonwealths. But it is not these, the result of defective statutes, to which reference is made. It is rather to those unlooked-for incidents continually arising, and which the health officer must meet. Permit me to cite an emergency with small pox as the threatening danger, and to tell what

was done. The Sunday papers, several months since, carried the information that small pox had been discovered in an adjacent town. Here was an emergency demanding prompt action. The news was received about noon. At five o'clock the telephone was called into requisition, and continuously used until eight o'clock, "three mortal hours." In that time the nature and location of the infection had been ascertained, showing at once, by the way, that the newspaper accounts were gross exaggerations; the physician of counsel in a neighboring city had been interviewed, the local doctor not being accessible by telephone, the selectmen and board of graded school trustees as well as the town counsel had been consulted; likewise the head of the school faculty, and meetings for seven o'clock, Monday morning, had been called. In this instance the authorities acted in concert, and at noon when the schools closed every scholar had his orders to take home a blank certificate of vaccination attached. Tuesday morning over two hundred of these certificates were filed, and some fifteen hundred in all were vaccinated. The proper representation, I believe, will secure the coöperation of town, village, city and school officials in every emergency that is real. Take another example. A drain had become a nuisance and what to do with it was a question taxing the ingenuity of several neighbors, who resided apart from the village and took summer boarders. The health officer was appealed to for assistance. This particular official had accumulated quite a library on sanitary matters, and therein was found one of the late Colonel Waring's suggestions which it was decided to try, and which solved the problem of that particular drain.

4. Many inferences in what we have already written imply the "duties of the health officer"; and as experience is the safest teacher, it has seemed to me that the statement of what was done in two instances would well suggest the basis of the discussion to follow under this heading. (a) Diphtheria is the first. A recent instance where diphtheria attacked a lad of ten, one of a family of half a dozen, all of whom associated with two other families with children. Two of these had slept with the patient during the night, the doctor having been called at about 3:30 in the morning. The house was one of those factory tenements, which, built for two families, was occupied by four. An old building and the whole interior open to exposure. The patient was treated with anti-toxic serum. The immunizing doses of five hundred and six hundred units were administered at once to all who had been exposed, both within and without this dwelling. The milkman's boy failed to notice the quarantine card on the front door that morning, as he passed around to the rear door; and, during the forenoon, we captured him, and gave him a dose of five hundred units. Result: the patient recovered, and no one else developed the disease. Our selectmen contend that anti-toxin costs less, expensive though it be—and we use the extra-potent—than funeral expenses, to say nothing of the value of life, and the safety of the community involved. (b) Scarlet fever. Not to enter too much into detail, and to avoid any appearance of egotism, I may be permitted to say that scarlet fever infection can be kept confined to a single room, opening into the living room of a family of small children

in a tenement neighborhood, for it has been done. This is often the experience in hotels and among people of means, but has been thought impossible in the lesser favored portions of the city. It all depends, brethren, on the way it is managed. Poor and ignorant people hold life dear, and are quick to respond to honest efforts, intelligently put forth to save them from peril, and to help them in material form. Just here comes in the "father confessor" suggestion, and the ability to read human nature.

5. *Responsibilities.* The limits of this paper have already been exceeded, but a few words additional should be spoken. The health officer is responsible to the entire people. They look to him as the public guardian who shall ward off contagious diseases, and are demanding more and more effort on his part. So that whether the summons comes by day or night he must instantly respond to the call of duty. He must know what to do, and knowing dare perform. He must know neither friend nor foe in the discharge of his official duties. Every one must be used exactly alike as to quarantine, as to obedience to orders, and this must extend even to relatives. No other course is consistent with success, and none other will secure and retain the confidence of the community.

*Discussion by Dr. L. M. Greene of Bethel.*

I have made no preparation for the discussion of this paper, for I did not know what the paper would contain. I would only make a few remarks upon some of the specific duties of the health officers of more or less importance. The health officer is more or less dilatory in his duties in many of the details. Take, for instance, the water supplies on the farms. In the large cities where there is a public supply, it is a simple matter to ascertain the fitness for drinking purposes, and keep that supply in proper condition, but in the smaller towns where there is no public supply, where the village may have three or four different cisterns supplying seven or eight families, it ought to be one of their duties to make themselves familiar with the supply. As an illustration, a case of typhoid fever in my own town came on awhile ago. I could not find the place where that infection could have originated, except in this house where this patient lived. It was a tenement house, four families residing therein. Three of those four families got their water from a spring which supplied a tank in a cellar. It was a wooden tank and I found that it had not been cleaned out for fifteen years and it was coated one half to three quarters inches thick with a slimy material and I know that this case must have come from that tank of water, and had I inspected that cistern years ago, and seen that it was kept cleaned out, we probably would not have had that case of typhoid fever. When we have typhoid fever back on our farms, we should look out for their water supplies. We should have this well watched, and if needed cleaned out regularly, and have that well treated to the same. It is one of the duties of the health officer to be very particular in performing his duties regarding the water supplies. Another case was a case of diphtheria, and this patient had not been out of town and no one had



been there, and it was a mystery to me as to the origin of that case. I don't know whether it came from a spring or not, but I went up there and found a dead goose up at the spring, rotted. Three of the family had diphtheria, and I think it must have originated from the drinking of this spring water which had the dead goose in its vicinity. Again, the health officer should be more careful about tubercular patients. Whenever a physician has a case of tuberculosis, that physician should notify the health officer, for, as tuberculosis is one of the questionable diseases, I suppose they often hesitate to notify the health commissioner. I believe the health officer should ascertain whenever there is a case of tuberculosis and should instruct that patient and the friends of the exact condition and in a reasonable and kind manner present the information to the patient, for him to take care of the sputum and all things connected with the case. I think this rule should be in the regulations of the State Board of Health. They should make that disease a specific one that health officers should be careful about. I will leave that discussion for others now.

---

## SANITARY LEGISLATION.

BY W. N. PLATT, M. D., OF SHOREHAM.

Sir Robert Peel speaks with the air of a discoverer of that great compound of folly, weakness, prejudice, wrong feeling, right feeling, obstinacy—newspaper paragraphs which are called public opinion. Yet this has been the ultimate power behind law in all times; statutory enactment that remains any length of time the law of the land, is crystallized popular sentiment and any sanitary legislation to be beneficial and enduring must voice the public sentiment.

A law that cannot be enforced is worthless and reactionary. A bill not in accord with the public sentiment would probably endanger the wholesome health laws that we now have. When we compare the Vermont laws with those in vogue elsewhere, we, or rather the people of Vermont, have the right to feel that this state, in public health legislation, is among the most advanced of the states.

I know of no other state or country except our own that has an absolutely free laboratory, not only for pathological investigation, but for the examination of water and food supplies. I know of no other state that gives its health officers the right to appoint the local deputies, the right to define so fully what is meant by a "contagious disease." Compared to other localities, our health department has a very reasonable appropriation.

The public should be impressed that the principal zymotic diseases are *communicable* and *preventable*; and with proper environment and precautions this class of diseases ought to cease to exist. The mortality from infectious diseases should be lessened more than forty per cent. (I include

tuberculosis.) These people die at an age, mainly, when they are about to become producers and take their places as economic factors in the commonwealth.

With our present knowledge of sanitary science, and the law as it is, a great deal more would be accomplished if the health officers were more thoroughly instructed in their duties.

The University of London has established a course and grants diplomas in public health, and is now, every year, producing a number of highly trained scientific men with very satisfactory results. With this example and the startling experience of the German scientists, why should not the University of Vermont establish a course of medical sanitation? I do not mean a short course of a few months but one worthy of a degree. If a man has learned all that he can concerning prophylaxis; if he is capable of establishing a quarantine, also of destroying the germs of disease; if he thoroughly understands the law of isolation, I think there would be no doubt that such a person would be a life-saving ordinance in the area which he controls. Such a person would be of more value to the state than a large number of engineers, therapists or surgeons.

The laws of the state of Vermont should give to the scientific health officer the same right to isolate and quarantine tuberculous and malarial persons that it does more infectious cases. The people must know that there is a difference between sumptuary law and the right to menace the homes of the community. We require some enactment by which, as soon as possible, every tuberculous person should be known to the community, and everybody put on his guard. While discussing tuberculosis, I call your attention to the hospital for this disease at Rutland, Mass., supported largely by state contributions. If the wonderful reports of cures so generally believed by scientists the world over are true, every state must and will have a like institute. States as well as individuals are often inconsistent. Four municipalities in England have given their health officers the right to inspect and control the more infectious diseases but have debarred them from the control of consumption in any of its forms. Our treasury department and marine corps have more rationally decided, in the case of the Japanese missionary at San Francisco, that tuberculosis is contagious.

The law of the state also says that cattle suffering from tuberculosis shall not be brought into the state.

At the present time the largest state expense results from criminology, but it does not require a very strong imagination to see that, in the near future, a larger amount will be expended for public health; and sanitation is soon to show us the myriad of valuable lives that can be saved by careful public supervision.

In closing let me add a few practical suggestions to health officers, by naming three difficulties with which the modern official has to contend, but three which are perfectly surmountable.

In the first place, malaria is a disease which in a way can be eradicated. The distribution of the anopheles is sufficiently understood, even now, to make possible the destruction of their breeding places and the cutting off

of their malarial food supply. Such treatment would render them practically harmless.

In the second place, a general epidemic of typhoid fever is almost always water-born. Science, at the commencement of the twentieth century, has discovered the means of destroying this dreaded disease at its very outset.

Lastly, it has been clearly demonstrated that the germs of measles, whooping cough, diphtheria and scarlet fever are developed in the human system and therefore can be destroyed by a perfect system of isolation. A little money and a few simple laws, well executed, would save more lives than the combined efforts of the whole medical fraternity.

To sum up then: there are three directions in which sanitary legislation should be turned. The frequent, regular and careful examination of all water supplies followed by immediate disuse in case of contamination; the more complete destruction of common germ-carriers such as rats and insects; and, finally, and most important, the absolutely thorough isolation of all contagious diseases, without regard for sentiment and feeling. These three lines suggest such improvements as will do more than anything else to prevent the awful tragedies with which every physician is so familiar, and these improvements must be carried into effect by the physicians.

*Discussion, by Dr. W. S. Hubbard from Lyndon.*

I notice in that paper of Dr. Platt's that he gives us many good points on sanitation—first, that sanitary legislation must be backed by public opinion. That is a self-evident fact. All of you will agree to that, but what has been the condition of the state of Vermont during the last twenty years, or up to 1886? It was impossible to enact a law creating a State Board of Health. At that session of the legislature, a bill was introduced to create a board of health and was then referred to the appropriate committee. That committee held a meeting and a number of medical men came before that committee and one prominent man from Montpelier is known to have come in and made this statement: "We are well enough as we are. Vermont is an agricultural state and does not need a State Board of Health. It is an experiment that is not wanted." The medical men of Burlington were anxious to get this bill through. There was an epidemic threatening us. They hustled about to see what they could do. They appealed to the governor to see if he could not help them out. He wrote to the president to see if there was any money which could be used to prevent the bringing of small pox into the United States. They found there was a little money here for the stamping out of yellow fever. He communicated with the governor and agreed to furnish this little money and one man to help the physicians in Vermont, but they were to work without any pay. You all know that we are a generous people and that spirit maintained itself at that time and the physicians volunteered their services. Their board and traveling expenses were paid, and the result was they were successful in keeping out the small pox and consequently as a result, a great saving of life to the state.

Tuberculosis has been referred to. I think you will all agree that tuber-

culosis is a communicable disease, and should be cared for. It seems to me it would be a wise thing to have some legislation enacted which would require the health officers to report when they find such a case that it might be registered by the State Board of Health, possibly without the names, but something should be done in that direction that we might know how many there were in the state so that some means could be taken to mitigate the disease, and thus the poor and needy have the proper care. I believe it would be wise for the members of the State Board of Health to make some suggestions as to the establishment of a home for all those suffering from this dreaded disease—tuberculosis.

*Discussion by Dr. W. D. Huntington of Rochester.*

I was fortunate last year in being a member of the last legislature and a member of the Committee on Public Health, and it seemed to me when I received a program that there was to be a meeting of the public health committee, but I have been disappointed, for they seem to have all deserted me and left me here on foot. I had the pleasure to be present at the school of health officers two years ago, and I have seen a greater interest manifested throughout the state by that school than by any other measure that could possibly be taken. From that nucleus started, I believe the State of Vermont will enact and can enact in a measure laws which will promulgate public health. It was with little opposition that the laboratory appropriation was increased, and now with this school of instruction, educating the people at home we ought to have little trouble in getting the appropriations called for at the coming legislatures, provided they are reasonable. As it is getting late, and there are others to speak, I will leave this subject to those to further discuss.

*Discussion by Dr. W. N. Platt of Shoreham.*

Why is it that we have not a department for urinary analyses in our laboratory, free of charge?

*Answer by Dr. C. S. Caverly.*

Because it does not belong to public health work. This is the laboratory of hygiene.

*Dr. Platt.* A department for urinary analyses could be added without much expense to the state, could n't it?

*Dr. Caverly.* Yes, I think so.

*Dr. Platt.* You would have to have a new assistant, I suppose?

*Dr. Caverly.* There is no pathological work done at this laboratory, except in connection with the criminal work, free of charge. It might interfere with the professional work of the different doctors throughout the state. There seems no doubt but that urinary analyses could be done there with comparatively little expense.

*Dr. Platt.* Oh, it would reduce the income of the profession?

*Dr. Caverly.* There are individuals in the larger towns of this state who receive a fee for this work, and for that reason it was urged that it would not be politic for us to have such a department, and because it does not seem to belong to public hygiene.

*W. D. Huntington, M. D., Rochester.*

I believe that subject was brought out at the last legislature and quite a lengthy discussion took place, and it was finally decided that it did not belong to a laboratory of hygiene.

---

### THE RELATION OF ANIMAL DISEASES TO PUBLIC HEALTH.

The average physician takes pride in his ability to successfully treat disease. Many excel in diagnosis, too few are thoroughly posted in etiology, and a still smaller number ever trouble themselves about the source from which the cause of disease emanates.

"Whatever is capable of damaging the structure of any organ or tissue of the body, or of interfering with its functions, may be the cause of disease." This definition implies that such causes are numerous, and that of many science is ignorant.

To give a succinct account of them is therefore difficult. It is not within the province of this paper to attempt anything of the kind, but to call to your attention for a few moments a prolific and common cause of disease in the human family, the transmission of animal disease to man. All civilized races of the globe have surrounded themselves with domestic animals. We have the cow, the horse, the pig, the sheep, the goat, the dog, and others; each and all of them have diseases that are easily and frequently transmitted to mankind.

When we consider the intimate relations sustained between man and our domestic animals, the only wonder is that we do not more frequently suffer disease contracted from such sources.

Of all domestic animals known, none are so intimately or closely related to the human race as the cow. We are veritable parasites on this animal. We milk her, as long as she will give milk, and drink it; then we kill her and clothe ourselves with her skin; we comb our hair with her horns and fertilize our fields with her dung, while her calf furnishes us with vaccine virus for the prevention of smallpox. The cow has redeemed us from that dreadful scourge. But it is more than possible that a greater scourge is continued to us by the same animal. Strange it would be indeed, if, under all these circumstances, we did not acquire from her some malady.

As the magnitude and gravity of this subject is but little appreciated, it will be best introduced by stating in a tabular form the diseases of domestic animals that are known to be communicable to man. We have:—

1. Glanders and farcy in horses, etc.
2. Canine madness, rabies in dogs, cats, etc.
3. Malignant anthrax in all domestic animals.
4. Tuberculosis in all animals.
5. Malignant cholera in all animals.
6. Milk-sickness in all animals.
7. Smallpox in all animals and fowls.
8. Diphtheria in animals.
9. Scarlet fever in various animals.
10. Possibly typhoid fever in sucking animals.
11. The plague which is a disease so common to men, monkeys, and rodents, and is so equally shared by them that no one knows whether it was primarily a human disease or a rat pest.

To enter upon a consideration of the pathology of these diseases would require more time than is at our disposal, but it will be well to consider some of the ways in which a few of them are transmitted to man.

Dr. Law says "that glanders and farcy, which so remorselessly ravaged the cavalry regiments and mule trains during the war of the rebellion, was, at the return of peace, scattered widely over the continent.

"In the country districts we see it continually cropping out and whole studs falling victims to its ravages, while in city car-stables hundreds have not unfrequently been slaughtered to arrest the progress of the disease. The subjects of slight chronic attacks are frequently taken to a distance and sold as sound animals to unsuspecting purchasers, whose health and lives are thus too often sacrificed to satisfy the cupidity of an unscrupulous vender; for the terrible malady is as painful, loathsome and fatal to the human system as to the equine, and every veterinarian of extensive practice can adduce instances in which men have perished miserably from equine infections.

"Human glanders has been recognized for nearly a century as one of the most loathsome and fatal of diseases. It is usually contracted from the horse or mule by accidental inoculation in wounds, and consequently happens almost wholly among those who have the care of horses, and is therefore most common in man in the countries where it is most prevalent in horses. In Montana and other Rocky Mountain states it has been epidemic.

"In all forms of malignant anthrax in animals, we find an infecting material which is not only deadly to quadrupeds, birds, and even reptiles and fishes, but which may be successfully inoculated from any one of these upon the human subject. The malady when conveyed to the human being is a very deadly one, whether it shows itself on the surface in the form of malignant pustule, or internally, as carbuncular sore throat or intestinal anthrax. In this country it prevails mostly among butchers, tanners and workers in hair, but is also well known as the result of consuming the flesh of infected animals. Infection from simple contact is by no means uncommon.

"Where the disease becomes wide spread, the resulting mortality may be excessive, as when in 1770, fifteen thousand men died in six weeks in San Domingo from eating diseased beef. Cooking is a very insufficient pro-

tection as the spores have been shown to survive a boiling temperature and, in particular cases, even three hundred degrees Fahrenheit, and a whole family were poisoned by beef that had been boiled for hours. Further, and contrary to what holds with most other forms of virus, it is not essential that the skin should be broken in order to its absorption. Frost has no influence on its potency, and animals have been known to be fatally infected by licking the frozen blood from a stone-boat when the temperature was below zero.

"Infected pastures have been known to maintain their infecting qualities for six years in succession and to yield hay which continued to infect animals when fed to them at a distance from such pastures.

"Milk sickness. The trembles. Our best veterinarians claim that the great importance of this disease has failed to be recognized mainly because its source is to be found in certain backwoods districts rarely penetrated by those who preside over our medical literature, and because it gradually recedes before the advance of improved agriculture.

"Many medical men indeed express grave doubts as to its very existence. Yet the history of the malady is so circumstantial and clear that a doubt as to its specific nature is eminently disingenious.

"In its source in unimproved marshy localities it closely resembles the malignant anthrax, also in its communicability to all animals, but it differs essentially in that it fails to show local anthrax lesions, in place of which it expends its energy on nerve centers, producing great hebetude and loss of muscular power. According to Dr. Phillips it is characterized by the presence in the blood of a microzyme, like that seen in relapsing fever.

"The germ is probably derived from the drinking-water or the surface of vegetables, as certain wells are found to infect with certainty and the disease has been repeatedly produced by feeding upon particular plants (*Rhus toxicodendron*, etc.). That these plants in themselves are not the pathogenic elements is shown by their innocuous properties when grown in places out of the regions of milk-sickness infections. It seems altogether probable that here as in anthrax we are dealing with a microzyme which has developed pathogenic properties and which can be reproduced indefinitely in the bodies of living animals. The great danger of this affection consists in the conveyance of the germ with unimpaired potency through the flesh and milk and through manufactured products of the latter, butter, milk and cheese.

"Some even hold that in animals giving milk the system does not suffer materially, but that it is saved by the drainage of the germs through the mammary glands and that thus a milk-sick cow may remain for a considerable time unsuspected while her milk, butter and cheese are conveying mental and physical decay and death to many human beings near and remote. For the disorder proves as fatal in man as in animals, and if in particular cases it fails to destroy life, it usually leaves the subject in a condition of hebetude and physical weakness that makes life miserable."

Of the twenty or more parasites common to animals and man, I will allude to but one; the *trichina spiralis*. This parasite is harbored by very

many mammalia and probably reptiles, but is above all common in pigs, rats and men. To enter upon a consideration of this subject would only serve to weary your patience, as each and all of you have in your libraries many works that treat upon the subject, which, by the way, is one that most practitioners consider of little importance, for in our Vermont towns among the native population the disease is rarely seen and more rarely diagnosed. That the disease exists, was very forcibly impressed upon my mind during the first years of my practice, while doing hospital work in an institution that was peopled mainly by a low foreign element. Out of about five thousand patients treated there during my service, in about ten per cent, the malady was diagnosed and a section of the deltoid would reveal the little devils at most any autopsy. It has been claimed that about eight per cent of the hogs killed in Chicago have trichiniasis.

In considering in a brief way a few of the diseases common to, and transmissible from animal to man, I have designedly left until the last the question of tuberculosis, it being one, at the present time, of more than ordinary interest to the average Vermonter. It is a disease that affects nearly all of our domestic animals. Cattle suffer more than any other domestic animal, and tuberculous cattle are especially to be dreaded, seeing that they furnish so much food for the consumption of man. Statistics show that from five to eight per cent of all the cattle in our northern states suffer from this disease, while in some localities fifty per cent or more are tuberculous. The question whether the bacillus which produces the disease in man is identical with that found in cattle has always been one of very great importance. Upon the affirmative settlement of the question rests the possibility of the transference of the disease from animals to man and man to animals. It has been generally believed by scientists from the first that the species of bacillus found in man and cattle are the same. The apparent difference that may exist may be accounted for in the difference in environment. It has been demonstrated that the tuberculous material from man may produce the tuberculosis disease in cattle, and there have been many instances that point to the conclusion that the disease has been transmitted from cattle to men. If the disease can be carried from one to the other, there can be no question that the bacillus is the same in both animals.

Dr. E. R. Brush of Mount Vernon, N. Y., a very bright and logical writer, goes on record as a believer in the idea that tuberculosis originated as a bovine disease. He says: "One simple fact that strengthens my belief that human bacillary tuberculosis is all derived from bovine species is, that where this animal does not exist pulmonary consumption is unknown.

"The Kirghiz on the steppes of Russia, who have no cows, have domesticated the horse, using its meat, milk and skin, and a case of pulmonary tuberculosis has never been known to exist among the tribe.

"The Esquimaux has no cows, neither has he pulmonary phthisis and I think that it can be laid down as a fact that where dairy cows are unknown consumption is unknown." He further says: "The reason that tuberculosis is not more frequently transmitted from cattle to man is accounted for in the difference in temperature. A germ cultivated in the cow is a tropical



growth because her average temperature is between 101 degrees and 103 degrees Fahrenheit. The human race, by this mode of illustration, represents the temperate zone.

"Coffee will not grow in Connecticut unless you put it in a hot house. The bacillus introduced from the cow into the healthy man finds a difference of temperature of four degrees or five degrees, and although it may live and in a lesser degree increase, it does not become virulent until from some other cause the temperature of the man is increased, when it rapidly multiplies and thereafter creates its own proper temperature, such as we find in most cases of tuberculosis.

"Undoubtedly more deaths from tuberculosis occur among the human race than among animals, but there are far more dairy cows infected with tuberculosis in proportion to their number than in the human family. There is one very good reason why fewer deaths occur among dairy animals than among mankind, which is, the high natural temperature. We know pretty conclusively that the tubercle bacillus requires for its growth, multiplication and pathogenicity, a temperature above that of the normal body and curiously enough, the raised temperature of the human subject that is pathognomonic of the growth of the tuberculous masses is the normal bovine temperature. Consequently tubercle will grow in the cow without any disturbance of her normal temperature and the train of consequences that follow the effects of increased bodily heat does not occur in the cow from an invasion of tuberculosis. Therefore, the progress goes on in the animal and unless other morbid conditions supervene to increase the bovine temperature the tubercle does not break down and cause sepsis which is always the cause of death where the primary disease is tuberculosis."

Is not this a logical explanation for the apparent good health, good flesh and prime condition of so many of our cattle that have been subjected to the tuberculin test, condemned and when slaughtered are found to be to a greater or less extent diseased?

It has surprised people, dairymen as well as physicians and veterinarians, to find cattle apparently enjoying perfect health, in good flesh, in fact good beef, when slaughtered, in an advanced stage of tuberculosis.

The normal temperature of the cow seems to be the temperature at which the bacillus of tuberculosis flourishes best. It can and does multiply, flourish and increase in her body without making her sick, because it does not increase her temperature, and she may go on in that way for years without apparent injury until finally sepsis and death take place.

But the bacteriologist will tell you that the bacillus may and has been artificially multiplied and increased at a temperature even below that of the normal body, and that it has been found in the body of the carp whose temperature was probably that of the water it inhabited. That signifies nothing, for it is no evidence that even though it may live and possibly multiply at such temperature that it ever becomes pathogenic under such conditions.

For example, the presence of the Klebs-Loeffler bacillus in the throat of an individual signifies nothing but exposure. It requires its presence and

successful development under favorable conditions to produce diphtheria. Further evidence of this theory was given in a lecture by Prof. Klebs in 1896, although he did not seem to have this idea in view. He said: "That there exists a very high power of resistance against tuberculous processes in normal man and animals has been shown by myself and others, through the different intensity of different infections in various animals. I have also demonstrated that the greater number of tubercle bacilli injected into the blood are destroyed there; in rabbits not more than seventeen of a thousand bacilli injected into the blood vessels will find opportunity of forming tuberculous knots in the tissues.

"I regard nidulation (nest-building) which we call tubercle as the first step in tuberculosis. Their nests may be developed in very small numbers and the tuberculosis can remain for a very long time in a very dormant or latent state, as in single tubercle of the brain, the bones or the lungs. The spreading of tubercle bacilli from their nests is undoubtedly a consequence of an alteration of the general health.

"The bacilli in such nests will not develop without some help from the body of the infected person. If the organisms which lay dormant many years in their nests begin all at once to increase in number and then propagate by detention in the blood or lymphatic vessels, there must be a diminution in the power of resistance, produced by other diseases like measles, influenza, etc." Here we have increase of temperature with lowered vitality as advocated by Dr. Brush.

The very important and practical question that arises in the minds of every one is not, Does the disease called tuberculosis exist among our cattle? for the affirmative has been demonstrated to the satisfaction of every intelligent person, but, Does its existence endanger human health and life? A negative answer is many times given by laymen, veterinarians and even physicians. A man may be a bright, intelligent farmer, lawyer, merchant or even physician and yet be in no way competent to have even an *opinion* upon the subject, much less to try to influence an inquiring and interested friend, for the reason that he never has given an hour's study to the subject.

If I ever pretended to have a belief about a matter of the most expert inductive science, constructions of dynamos, spectrum analysis, etc., and to publish that belief, when it utterly and absolutely contradicted the opinion of every expert in those sciences, I should hope I would be silenced for my egotism and impertinence. This is not a matter of what you believe or what I believe. Our experience and observations in this particular line may have been limited. But what is the recorded experience of competent men who have devoted months and years to the study of this particular subject and have demonstrated the truth of what they teach?

The International Congress of Tuberculosis, which convened in Berlin, May 24, 1899, offered a prize of four thousand marks for the best essay upon tuberculosis as a disease of the masses and how to combat it. As a result eighty-one essays were received, and July 31, 1900, through its committee, the international prize was awarded to Dr. S. A. Knopf, of New York.

Chapter sixteen of the essay, under the heading of "What can the farmer

and dairyman do to diminish the frequency of tuberculosis among animals, and thus indirectly stop the propagation of disease among men?" the doctor says: "Every one who has anything to do with cows should be acquainted with the nature of tuberculosis in cattle, also known as bovine tuberculosis. In animals as well as in man the direct cause of this disease is the tubercle bacillus. Bovine tuberculosis is prevalent in nearly every country. The symptoms of the disease are much like those in man. They begin with relatively slight functional disturbances. The way the germ of tuberculosis is transmitted from animals to men and also from men to animals has already been explained. The contagion or rather propagation of the disease among animals takes place in various ways: first, by drop infections, that is to say little particles which are expelled during the seemingly dry cough. Secondly, by discharges from the lungs, or also from the glands of the throat, coughed up in the ordinary way. Thirdly, through tuberculous matter coming from the bowels. Fourthly, through secretions from sexual organs (vagina or uterus). Fifthly, through the milk if the udder is tuberculous, or if the whole body of the animal is invaded by the disease. Finally, the disease may be directly transmitted from the tuberculous cow to the calf.

"Fully nine-tenths of all diseased animals examined have been infected by inhaling the bacilli dried or suspended in the air.

"Fully one-half of the diseased animals examined have been infected by taking the bacilli into the body with the food.

"This implies that both food and air infections are recognizable in the same animal in many cases.

"Animals are infected, though rarely, during copulation. In such cases the disease starts in the uterus and its lymph glands, or in the sexual organs and corresponding lymph glands of the bull. Perhaps from one to two per cent of all calves of advanced cases are born infected. Among the two hundred cases of tuberculosis, including all ages, which have been examined by the writer, there were about two per cent in which the disease is best explained as having been directly transmitted from the mother during or before birth.

"We may define the dangers of infection somewhat more definitely by the statement that in any herd, even in those extensively infected, only a small percentage of the diseased animals, namely, those which are in an advanced stage, or such as have the disease localized from the beginning in the udder, or uterus, or lungs, are actively shedding tubercle bacilli. It is these that are doing most, if not all, of the damage by scattering broadcast the virus.

"Disease of the udder is particularly dangerous, because the milk at first appears normal for some weeks, and therefore would be used with impunity. Moreover the bacilli in the diseased gland tissue are usually numerous.

"The foregoing statements apply to individual herds only. To what extent does the danger extend beyond the diseased herd to others in the neighborhood? To this we may give the general answer that there is no danger unless the animals mingle on the pastures or in the stable. Tubercle

bacilli are not carried in the open air, or if they are, their numbers are so small that the danger of infection is practically absent. It is highly doubtful whether they are ever carried in sufficient numbers by third parties from place to place to become a source of danger. The reasons for this must be sought for in the bacillus itself. The diseased animal is the only manufacturer of tubercle bacilli, as well as the chief disseminator. Tubercle bacilli, after leaving the body of the cow, do not increase in nature but suffer a steady decrease and final extermination in four or six months at the longest. Only after they have entered the bodies of susceptible animals, do they begin to multiply, hence, with this disease the only danger to other herds lies in the direct association, or in the transfer of a diseased animal or of milk from such animals. The great danger exists in the immediate surroundings of the infected and loses itself as the distance increases.

"Preventive measures—removal of diseased animals—this is the essential requirement in the suppression of tuberculosis. We have already stated that only in diseased animals the tubercle bacilli multiply. Hence, if these are removed and stables thoroughly disinfected, so that any germs shed by them are destroyed, we are safe in concluding that the disease is suppressed.

"The disease in the early stages can be detected only with the aid of tuberculin. In the advanced stages most careful observers will probably recognize it, or at least suspect it without the use of the tuberculin. Tuberculin has, therefore, become indispensable in giving the owner an idea of the inroads the disease is making in his herd and distinguishing the infected from the non-infected. Tuberculin reveals to us all stages, from the earliest, most insignificant changes when the animal is outwardly entirely well, to the gravest and most dangerous types of the disease. Tuberculin does not, as a rule, discriminate between these cases. Hence, those who use it as a guide must not be disappointed when, after having killed the suspected ones, they find that many are in the earlier stages of the malady. Tuberculin, moreover, is not infallible. A small percentage of cases of disease are not revealed by it. On the other hand a sound animal now and then gives the reaction of tuberculosis. These lapses must be borne in mind in using tuberculin. In spite of them, however, tuberculin must be considered as of great value in revealing tuberculosis not recognizable by any other means during life.

"The question next arises, What shall be done with the infected animals? This question is really composed of two distinct questions whose combination is mainly the cause of the present perplexity. From the standpoint of the farmer alone the matter is simple enough. The animals might be separated at once from the non-infected. Those without outward signs of the disease might be fattened for the butcher and inspected. But at this point public health appears and demands the prompt and complete destruction of all infected animals, however mild the disease, or, if the animal be not destroyed the rejection of the milk of all infected animals. The interests of the stock owner and of the public health are thus diametrically opposed.

"After all animals have been segregated or killed, as the case may be, and the stables disinfected, the remaining healthy animals should be re-tested with tuberculin within a certain period of time, from three to six months after the first test, to make sure that no disease has been overlooked.

"Future repetition must be recommended according to our present knowledge, for some cases may have been missed by the tuberculin or the disease germs may possibly be re-introduced by tuberculous human beings or by tuberculous cats, dogs or other domesticated animals. All animals introduced into a herd must have been tested and found to be sound beforehand. This is such a self-evident proposition that it needs no comment.

"The tuberculin test should always be applied by a competent veterinarian and no danger will arise to the animals, for when properly applied the healthy animal is never affected thereby. Disinfection of all stables and surroundings that have been inhabited by tuberculous cattle should be thoroughly done. Cattle should be housed as little as possible.

"A royal commission appointed by the British Parliament reported in 1888 that their investigations proved the fact that tuberculosis-infected milk is the principal source of infection in the seventy thousand deaths per annum in Great Britain from tuberculosis and especially dangerous when derived from milch cows where udders are affected.

"The great danger of tuberculosis-infected milk has been emphasized by Sir Richard Thorne in his Harben lectures whereas, the phthisis in adult life has steadily decreased pro rata with sanitary improvements, the number of deaths amongst young children from *tabes mesenterica* has increased as steadily, and that, too, proportionately with the amount of milk consumed, particularly infant's milk. It is calculated that 25 per cent of the milch cows in Great Britain are tuberculous."

Dr. John D. Richards of the Loomis Sanitarium, N. Y., in Sajous *Cyclopedia of Medicine*, published the present year, says: "Infection by tuberculous meat eaten in a partially raw condition has been frequently demonstrated as well as the danger of infection by tainted milk. The latter is not an infrequent source of infection and by many observers is accountable for the prevalence of intestinal and mesenteric tuberculosis in children."

The International Congress of Veterinary Medicine at Paris adopted the following resolutions:—

"1. Bovine tuberculosis should everywhere be classed as a contagious disease and under the supervision of the health authorities.

"2. Animals known to be tuberculous should be killed and their meat excluded from the markets.

"3. That the use of milk from tuberculous cows must be prohibited.

"4. All dairies should be subjected to a scrupulous inspection from time to time."

Dr. Harold C. Ernst, of Jamaica Plains, Mass., in a paper read before the Association of American Physicians, said that "there was no ground for the assertion that there must be a lesion of the udder before the milk could contain the infection of tuberculosis. That the milk from cows affected

with the disease in any part of the body might contain the virus. That the bacilli of tuberculosis were present and active in the milk and in a very large proportion of cases, in cases affected with tuberculosis, but without any lesion of the udder."

The Scottish Metropolitan Medical Society unanimously adopted the following resolutions:—

"That the society, thoroughly believing tuberculosis to be a systemic and contagious disease, urge upon the government to stop the sale of milk from animals suspected of being affected with tuberculosis, to suppress the consumption of meat from tuberculous animals and to give compensation for a limited number of years."

The question of whether the udder is diseased or not, or even whether the particular cow from which the milk is drawn is tuberculous or not, in my opinion is one of little or no importance, if the fact exists that tubercular animals are confined in the same stable, for in a large proportion of tubercular cattle the disease exists in the gastro-intestinal tract and the bacilli are thrown off in the dung, and more or less of this adheres to the animal when it lies down and this by the careless milker is brushed off into the milk. The dung also becomes dried, the dust of the stable is loaded with the germs and it is doubtful if a pail of milk ever leaves a stable where the disease exists without containing tubercle bacilli.

The sources of possible contamination which surround the milk after it is drawn from the cow are many and serious on the majority of dairy farms as they are conducted at the present time. Until all of the dangers of the dairy are recognized many of the more grave menacing ills cannot be remedied. It must be remembered, in considering milk, that there is no other article of food just like it. There is no food, fluid or solid which presents so many favorable conditions for the absorption of the tangible material of disease and for its preservation and multiplication, and in no other instance is a medium for the conveyance of infection by which so much harm can be accomplished in such a short time. Of course, a certain degree of heat will disinfect milk but even a high temperature will not eliminate the toxins already contained therein.

Prof. H. W. Conn, in speaking upon the subject of dairy bacteriology, referred to the strange fact that milk, after passing through a centrifuge (the so-called clarification process), although it contains less gross impurities shows more bacteria than before. This is explained by the fact that masses of dirt are broken up and large numbers of bacteria liberated. He further says that within five years fifty epidemics of typhoid fever have been traced to a contaminated milk supply. While the ideal milk supply does not by any means include sterilization or pasteurization, he thinks that their methods could not at present be wholly dispensed with.

Around every dairy is a multitude of dangers, unfortunately, which are not always appreciated or avoided and hence culminate in disaster.

There are many other animals about the dairy besides the cow which menace the dairy product. Often as seriously as a diseased cow herself, horses, dogs, cats, rats, mice, and fowls undoubtedly are often the direct

means of infecting milk and of passing contagion along to the human race. Cats loll and purr around many dairies all day and it is a very common thing to see a wheezy old cat lapping warm milk from a pail or other container.

These animals are known to succumb to a throat trouble which appears identical with human diphtheria, and it is also known that they die from many tuberculous forms of disease. So it is not unreasonable to ascribe contagion to these animals when they are allowed the freedom of the dairy.

Dogs prowl about the farm day and night and very often depend upon the carcasses of dead animals for their living. Cows, horses and pigs often die of septic and contagious diseases; the carcasses are hauled into the woods and fields, away from the house, and there left exposed as meat for the farmers' dogs. These dogs come back and lap the milk from the pail, lick the empty vessels which are never perfectly cleansed and can there be doubt that the milk is thus infected? Where this danger exists in a dairy it is practically unlimited.

Rats and mice infest the ordinary dairy; they get into the milk and the milk vessels. These animals also have their diseases and therefore the element of danger and disease from these pests must be acknowledged. I could go on enumerating similar conditions until the close of this meeting, but there are other evils and dangers that we encounter besides bad milk that require some consideration, and in closing I will briefly allude to one of these, *i. e.*, the slaughter-house.

In many cases these houses are located on the banks of rivers or creeks, into which they drain. Frequently the offal is thrown down an embankment and left there to be eaten by hogs, dogs, and rats or to decay and drain into the streams. Quite often the slaughter-house is located on farms, the butcher giving the offal to the farmer as feed for his hogs, in lieu of paying rent. In case a town is provided with more than one slaughter-house, these houses are generally scattered north, south, east, and west, each butcher apparently trying to locate his house so as to prevent an undue amount of curiosity on the part of his competitors regarding the character of his stock. Every slaughter-house is, from the very nature of things, a center of disease, and naturally the poorer the conditions of the premises the more dangerous they are. If only a few animals are here killed, some are sure to be diseased. At least one of the hogs has trichiniasis and when the offal of this hog is fed to other hogs which are raised on the grounds these hogs cannot escape infection with trichinæ.

Slaughter-houses are generally over-run with rats, they eat the offal, become infected and transport the disease over an unlimited area.

Of the cattle killed during the year some of them surely have tuberculosis, and here let me say that during the past eighteen months I have ordered burned or buried eighteen beeves killed by our local butchers, that were so manifestly tuberculous that they did not dare to put them upon the market without consulting the health officer. Probably more than eighteen more went through unobserved, for when it is a matter of \$25 or \$50 at stake the butcher is not apt to use a magnifying glass. The entrails are fed to the hogs on the premises and there can be but one result, and that is to spread tuberculosis to the hogs on the premises.

Many of the dangers enumerated may be avoided by prudence and cleanliness. Many can be lessened by legislation and a rigid enforcement of the laws already enacted. The needed legislation is such as will require that the tuberculin test be applied to every bovine animal in the state, and the slaughter of every animal responding to the test; the immediate cremation, or where this is impracticable the thorough burying of the carcass. And unless the dairymen can be educated to see that it is not for their interests, to say nothing of the interests of the consumers of their products, to keep their cattle in unhygienic surroundings, such as small, dark, damp, and unventilated stables, and the pernicious, cruel and inhuman practice of stabling cows in any kind of enclosed stables on hot summer nights, a law requiring a rigid inspection of dairies should be enacted.

But unfortunately many of these dangers will have to be endured, for we are a heterogeneous people, where God is for us all, each one is for himself and the devil take the hindermost.

*Discussion by Dr. F. A. Rich of Burlington, Vt.*

I am very much interested in this subject, but I can add very little to this very excellent paper. I appreciate the paper, for Dr. Grout practices what he preaches. He has made a study of this matter for some time, and his paper shows this and possesses a value of its own on this ground. This is a subject which is receiving a great deal of attention at the present time, not only in this country but abroad.

It is now required of the students in many of our medical institutions that they take up, for a time, this subject that they may better understand the investigations that are going on upon the lower animals. We note the actions of a great many drugs by the results on these lower animals and are governed accordingly, and also many of the serums are tested upon these lower animals, and it seems quite essential that we should know something of the anatomy of them that we may be able to interpret the results of such experiments and such investigations. It has always seemed to me that we should know that a horse has not an appendix; that he has no tonsils; that he has no gall bladder; that he has no vomiting centre; his stomach is small and that he must breathe through his nose, and not through his mouth. So much for the horse. Now in cattle—we should know that a cow has four stomachs and very large ones, too. That all food has to be vomited, that is, remasticated. I have often said that if I had a young man who was about to enter into the practice of medicine, I should first send him to a veterinary college. I think we can well afford to look into these things some; as there is considerable literature along these lines, and it is also very interesting, it ought to be appreciated by the medical men at least.

Just a word about some of the diseases mentioned in this able paper—first glanders. There is real danger from glanders and more perhaps than one thinks because of the fact that it is so insidious. It is not often very plain and not very easily diagnosed in all cases and often appears simple. In nasal glanders, it is very offensive. We had a case two or three weeks ago at Winooski—a man had bought a pretty good looking horse weighing about



twelve hundred pounds, but he claimed when he bought the horse it had a distemper. I found it in all probability to be glanders. Fortunately we have a test for glanders very like to the tuberculin test for tuberculosis. I applied it and the animal responded and was killed and, by the way, it had been transferred to another party and we had to travel several miles to find it. There is a source of great danger from this disease. It is often mistaken for toothache.

Then there is anthrax, which is not a very common disease in this state. We see occasionally a case of anthrax. We see more of black leg. Both are dangerous and can be transmitted to man. We have a preventive measure in the form of vaccine which can be used on farms where this disease appears, and our experience during the last four or five years has been very successful. There is a different vaccine for each disease, I might say.

Dr. Grout treated quite extensively of the bovine tuberculosis. This is a disease which is receiving a great deal of attention. There is one very gratifying thing about this disease here in Vermont—it is not a very prevalent one. The cattle commissioners have tested nearly one thousand head and have found only about four per cent out of a hundred where I am sure you will agree that that is very gratifying. Upon the whole, the work of testing has been very satisfactory. There is a disease in sheep which is often taken for tuberculosis. We have specimens sent us taken from different animals supposed to be tuberculosis. We often have sections of intestine showing this disease. It is the result of a small worm supposed to be confined to the South for a great many years, but now found quite frequently in Vermont. The nodules produced by this worm resemble tubercle bacilli.

There is another disease among cattle that is sometimes mistaken for tuberculosis. It is an infectious disease—lump-jaw. This is a malignant disease. It is not at all common here in Vermont. I, however, see these cases now and then. They should be looked after and attended to, and as health officers and physicians, you may frequently have occasion to run on to one of these cases, for if they break and discharge, other cases are sure to follow in the herd and you endanger the human family by the use of the products of those animals.

Another contagious and infectious disease is hog cholera. This is an important topic for the reason that people in whose herds it has been found will dress off their animals and put them on to the market. This has occurred several times, to my knowledge, and the fact that the swill from the hotels containing scraps of this kind of pork, is very liable to cause an epidemic of this disease among another herd thus gives evidence that this pork is used. This disease can be easily determined by taking the temperature of the animals. I do not allow the use of animals—such as pork, etc., where the animal's temperature ran up to one hundred and three.

There are a great many other diseases we might mention having more or less bearing upon the public health aside from the contagious diseases, but it does not seem advisable for me to take more time for that purpose.

We depend so much upon the flesh of animals for food, we should make animal diseases a specialty. I admire a point in Dr. Grout's paper where

he said that all butchers should report where cases look suspicious. There is a great deal in meaning what you say, and when Dr. Grout says, Take that animal and kill it, it has got to be done, and immediately, in order to save human life. I will leave this subject now for further discussion.

*Discussion by Dr. C. W. Peck of Brandon, Vt.*

This makes three years that Dr. Grout and myself have been obliged to play at the same game and blow a ram's horn on this same question. I said to Dr. Grout when I came into this room that it seemed like a waste of time to discuss this subject, but it seems to me that we have n't yet had just what we want on this subject. The question is, What are we going to do about it? What is the State of Vermont going to do about it? The local boards of health or the State Board of Health have been in existence for fourteen years. We have made some progress. We have made a great progress, but we have n't yet reached our goal. There must be something else done and upon this important subject—tuberculosis. It is a notorious fact that we find only a small number of diseased animals here in this state, only four per cent. If the farmer is the only one that looks after them, he finds only one per cent. That is a very great showing, I will confess. I have farmers living all 'round me and if I suggest to them that they have their herds examined, they at once say no. Or, perhaps, they begin to chew and walk away. They ought to have some kind of a law that would bring every man who would sell poisoned meat into the open market, to the bullring. That is the kernel we have got to crack. That is the nut we have been trying to crack for the last fifteen years. Thirty years ago it was not to be discussed. Twenty-five years ago it was being discussed. Twenty years ago some of our leading men were beginning to believe it. Fifteen years ago a large majority were believing it. Ten years ago we were all convinced that the germ theory of the disease had come to stay. To-day it is not to be discussed. It is the corner stone of medical attention. We no longer talk about the germ theory of disease. How is this disease communicated? There are four ways in my mind: Through the air we breathe; water we drink; food we eat; and contact. We are always being poisoned in one of these ways and there is no doubt about it. It is not necessary for me to tell you that five thousand people are being killed every year from tuberculosis in the state of Vermont; that six thousand children are being killed by milk; it is not necessary for me to tell you that hundreds and millions of these people are taking into their systems millions and thousands of the germs expectorated by tubercular patients along the streets, cars, hotels, etc. What kind of a state have you got? What kind of air have you got? I used to recommend the Adirondacks for patients suffering from tuberculosis; that was years ago; now I do not. I think the woods are full of those germs, and I have every reason to believe that they were thrown there by the tubercular patients. There have been people to the Adirondacks, not sufferers from tuberculosis, but well people, and they have come back, suffering wrecks, and I have every reason to believe they contracted that dreaded disease there. If you do n't know about these things, you ought

to know, and if you do n't know, you ought to listen to me, and go home and think of the three hundred thousand people in Vermont and a very large amount of them are farmers trying to poison you with poor food and milk. It is beyond conception. In my little town six years ago ninety-five per cent of a very large herd of cattle were found to have tuberculosis, and after two years that same man was urged to have his cattle tested. He was poor; his mother did n't leave him much, only a million or so. He had another farm on which eighty-five per cent of the cattle were found to be tubercular. That man has gone right along in the cattle business, making butter and buying and importing cattle without having them tested, which is against the laws of the state of Vermont. Where are your cattle commissioners? I never saw them. We have a law in this state that does not allow a man to import cattle into this state without having them tested and he has imported twenty at a time and only a short time ago he was asked to have them tested because his calves died when only six weeks old. I do n't know who is poisoning you individually. But why should this man be allowed to do this? Gentlemen, the question comes home to your very homes. It is idle to come here and talk. There is something rotten in the state of Denmark and we have n't got to take care of it, but what we have got to do is to see that our markets are kept free from this poisonous stuff. One man said that a certain farmer's stock was full of tuberculosis—his cows, his pigs, and his hens—and here you are eating tubercular eggs. Oh, it is a terrible thing when you come right down to the point of facts. You are sending men to Montpelier to make the laws while men right around us are left to break them just as fast as they are made. It is all rot and there is n't a doubt about it. Let me tell you what a dollar will do. I know a man who has one of the largest dairies and it is running every day. That man has had his cattle tested every six months, and I inquired about them. He said they were all right. All at once, he finds that thirty have a particular disease and he has to sell them and convey them out of the state in the night—sold and transported secretly. What does that mean? Everything going on nicely, eh? But does not that show that something was wrong in this instance? When you pinch a man's pocket, you pinch his very heart. I want you to notice this very point: these cattle were examined every six months and tested by one of the best cattle doctors in the town, and nothing was found at all the matter, but suddenly they break out with a peculiar disease and are killed and transported at night. What could a few dollars do in connection with this doctor?

My idea is to bring this thing to a focus. The physician has made great progress but there is yet much work to be done by you if the people are to escape this continual poisoning.

I am obliged to you.

*Discussion by A. C. Norton of Middletown Springs.*

I am not a public speaker and as Mr. Moore has just remarked I would like to know how many health officers have urged their patrons and other people to apply the tuberculin test to their cattle. I think it would be a

profitable thing to bring that matter before your people, and it do n't cost them anything to have the test applied and it ought to and should be done.

How many of you observe perfect cleanliness in your milk cans. Yesterday morning I was at a farm house, quite early, where they were supposed to take care of the things, milk cans, etc., in the way they should, but they did n't. The cans were supposed to be rinsed out with scalding water. The man came with a large kettle of water, and as he was getting out to where the cans were, the lady of the house asked him to harness up the horse; he put down the water and was gone, perhaps, twenty minutes; when he got back, the water was cold, yet he was supposed to rinse the cans out with boiling water. This is only an example of the many deficits in the manner of caring for the milk supplies.

*G. G. Marshall, Wallingford.*

I think each and every farmer should have his herd tested, and then he could sell in the open market his supplies, and he would be in great demand, for people would know that his goods were good and pure. I think it should be arranged that each farmer have his herd tested every month. Already two farmers have arranged for this, and patrons will demand this as soon as they come to realize what they want. As soon as they find out that they can get pure and wholesome milk from a certain milkman, he is the one they are going to patronize and not the one whose goods are both dirty and unfit for use.

*Discussion by Dr. W. H. Vincent, Orwell, Vt.*

Two years ago this same subject was discussed pretty thoroughly. We were all interested in this subject then; we went home, and then, after a week's time, we forgot all about it. That does no good. It seems to me there should be some way that we could get impressed, not merely for a day, or week, or month, but for all time. I tell you, we have got to take the people and educate them up to this subject. We know what has got to be done. It seems to me there should be something in the way of an institution or something like that, that would keep things humming until we get at the cause of the disease. I come from one of our small country towns. Every man furnishes his own milk, and it is no one's fault but his own if he does not get good, pure milk. Our towns are not so large but that we can take care of them. In the large cities it is different, and there ought, of course, to be more danger. Here it is so very different that there seems to be no excuse for not having good milk. I have known milkmen to deliver their milk from cans thick with rust and with filthy wooden corks. I do n't know where the milk went to; it went off on the trains and some one had to consume it. We each should watch our country towns, and then the milk that is shipped away will be clean and good, and no one will be known to have been affected from the use of the same.

## CONSUMPTION: NATURE AND PREVENTION.

The State Board has issued a circular, known as No. 8, upon the subject of tuberculosis. Desiring to diffuse as widely as possible a knowledge of the nature of this disease and the means of prevention, we present this circular in the following pages. Copies of this circular for general use can be had by addressing, with stamp, the secretary, Dr. Henry D. Holton, Brattleboro.

Consumption, phthisis, and tuberculosis are common names of the same disease. It is a disease of all climates and countries, and, so far as is known, no race is exempt from it. Reliable authorities estimate that it causes over one hundred thousand deaths each year in the United States. While it is the direct cause of more deaths than any other disease, it is now known that many cases, which are early recognized and treated, recover. It is also known that the death-rate from consumption is gradually being reduced, wherever active and intelligent measures are taken to prevent it.

It is also a disease of animals, affecting cattle, pigs, dogs, cats and fowls.

Consumption is caused by a germ, called the *bacillus tuberculosis*. It was formerly considered a hereditary or family disease. The frequent occurrence of several cases in the same family gave rise to this belief.

The establishment of the germ cause of the disease, and increased knowledge of the characteristics of the germ causing it, have changed our views in this respect.

It is probably rarely, if ever, inherited, but the *predisposition* to it is undoubtedly passed down from parent to child.

Few probably escape exposure, at some time, to the active poison of consumption, and that everyone does not acquire it is because all do not possess the requisite predisposition. Those who, by inheritance, have narrow, shallow chests and a tendency to glandular swellings in and about the throat, readily acquire the disease when exposed to the germ poison. Other predisposing causes of consumption are under-feeding and over-work, intemperance, residence in dark, damp, ill-ventilated and crowded houses, and whatever lowers the general physical condition of the individual.

The causes of consumption, then, may be considered twofold, *predisposing* and *active*. The *active* cause of the disease is always the tubercle bacillus. Tubercle bacilli are found in all parts of the bodies of those who have the disease. They are especially numerous and virulent in the expectorated matter, or sputum, from the lungs and in the discharges from tuberculosis sores.

The sputum swarms with the germs. They live in it after it dries, and even after it has become a part of the dust of our streets, shops, school-rooms, cars and homes. Dust always means germs; a dusty air is always germ air. The breath of a consumptive is harmless unless it carries tangible particles of mucus or sputum. We are probably all, at times, exposed to this means of infection, and this fact explains many obscure cases. It is



believed by good authorities that the live germs may be communicated to man by means of the milk and meat of tuberculous cattle.\*

Breathing germ-laden air and swallowing infected milk or meat are very common causes of human tuberculosis. The disease oftenest attacks the throat or lungs, and frequently the glandular structures connected with the alimentary canal. Other common sites of the disease are the brain and joints.

Consumption, then, is an infectious and communicable disease. Like all such diseases, whose causes are known, much may be done to limit its spread and reduce the mortality from it.

Fortunately the precautions which consumptives are expected to adopt to protect others who have not the disease, are also *sure to have a favorable influence on the course of their own disease*. In other words, they may prevent their own re-infection and aid natural healing process, thereby improving their chances of recovery by early adopting certain precautions.

To keep consumptives in ignorance of the true nature of their disease is sometimes considered a kindness; this is usually a serious mistake.

THESE RULES MAY BE FORMULATED FOR THE PROTECTION OF THE WELL AND FOR THE ASSISTANCE OF THE SICK.

The mother with consumption should not suckle her child. The infant of tuberculous parents should be carefully nourished and guarded against all catarrhal affections of the nose and throat. Glandular growths of the naso-pharynx and large tonsils should receive early medical attention.

Food and clothing should be adapted to the season and the child. Woolen clothing should always be worn next the body. Children in such families should never be confined in the home or the school room with those who have suspicious coughs. They should live much in the open air and have systematic physical exercises tending to improve general bodily vigor. All who have narrow chest or who are otherwise predisposed to the disease should practice to develop the respiratory muscles, and should lead out-door lives. They should practice "pulmonary gymnastics" early in life, and later select occupations which will keep them in the open air.

*Those who have the disease should first and foremost learn the importance of destroying all expectorated matter and all discharges from tuberculous sores; they should never spit carelessly on the floor of the house, or of the store or shop, or railway car, or on the street.*

Consumptives should not swallow the sputum.

At home such patients should always have a paper-lined cup, which can be boiled and whose contents, including the paper lining, can be burned; or they may use old newspapers or cloths which can be burned. They should never use handkerchiefs or napkins and allow these to dry; if such

\* Notwithstanding the recent utterances of Dr. Koch in which he raises the questions of the communicability of the disease from the bovine to the human, there are too many apparently well authenticated facts to the contrary for any doubt to have taken place for his statement to be accepted unless more evidence is made and evidence accumulated to confirm his opinion.

are used they must be boiled or soaked in a disinfectant solution the sputum on them has time to dry.

When away from home, consumptives may use cheap cloth material of any kind, and burn it as often as possible; or they may provide themselves with sputum cups, of which several inexpensive patterns are on the market. These should always be thoroughly disinfected or burned before their contents can become dry.

If an ordinary cuspidor is used by a consumptive, it should always contain one of the disinfectant solutions given below. The contents of a consumptive's cuspidor must never be thrown out where domestic animals can reach it.

A person who has consumption should never attend school; such a person ought not to work in a store or shop, or at any in-door occupation. Since it is practically impossible to prevent some who are in the incipient stages of the disease from attending to their occupations, stores, shops, street and railway cars should have cuspidors containing a disinfectant solution always accessible.

No consumptive should, under any circumstances, work in a bakery, dairy, creamery or other place where food or drink is handled.

Consumptives should always sleep in a room by themselves.

They should avoid kissing.

Men should be clean shaven.

They should not be nursed by near relatives.

If confined to the house, they should be in large, well ventilated rooms; the rooms should have no carpets, draperies, or hangings of any kind, and no unnecessary furniture.

The bedding should be frequently changed and aired, and all linen boiled or otherwise disinfected.

Such patients should have eating utensils separate from the rest of the family.

After the death of a consumptive, the room and all its contents should be fumigated and disinfected, under the supervision of the health officer.

THE FACTS ABOVE GIVEN AND THE RULES FORMULATED ARE SUGGESTIVE; THEY SUGGEST CERTAIN OTHER RULES WHICH SHOULD EVERYWHERE OBTAIN, AMONG THE WELL AND SICK ALIKE, AMONG THOSE WHO CONSIDER THEMSELVES PRE-  
DISPOSED TO THE DISEASE AS WELL AS THOSE WHO DO NOT.

The public schools should be guarded against this infection. Teachers should know the nature of the disease, and should investigate chronic coughs and so called "scrofulous" sores. Furthermore, school boards should make good health a qualification in their teachers.

Employers of labor should remember that one careless consumptive may endanger the lives of many workmen in a shop or factory.

Railway managers should see that their cars are cleaned at terminals after each trip. Seats and backs, when of soft materials, should be removed and